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VOLUME 10

IN THE SUPERIOR COURT,

State of California, County of Sacramento.

OCTOBER SESSION, 1881.

HON. JACKSON TEMPLE, - - - - - PRESIDING JUDGE.

WINFIELD J. DAVIS, OFFICIAL REPORTER.

SAMUEL OSBOURNE AND WILLIAM M. CUTTER, REPORTERS.

The People of the State of California,  
vs.  
The Gold Run Ditch and Mining Co. }

COUNSEL:

*For Plaintiff,*

HON. A. L. HART, Attorney General, GEORGE CADWALADER, ISAAC S.  
BELCHER, A. L. RHODES, RICHARD BAYNE.

*For Defendant,*

J. K. BYRNE, W. C. BELCHER, S. M. WILSON, W. T. WALLACE, A. B.  
DIBBLE, A. P. CATLIN.



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In the Superior Court  
of the State of California  
in and for the County of  
Sacramento

The People of the State of California	} Morning Session Thursday Dec. 1 <sup>st</sup> 1881
vs. The Gold Run Ditch and Mining Company	

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Winfield J. Davis  
Official Reporter



In the Superior Court of  
the State of California in  
and for the County of Sacramento

The People of the State of California	} Morning Session Thursday Dec. 1 <sup>st</sup> 1881
vs. The Goos Run Ditch and Mining Company	

Testimony  
of William Gwynn  
Resumed

(The Sacramento map hanging on  
wall is offered in evidence by the  
Plaintiff without objection)

Mr. Catlin. During the years 1850  
1851, 2, 3, 4, about what was the  
number of miners engaged in min-  
ing upon the Middle Fork of the  
American river?

A. From 1851 on; from the  
junction of the Middle Fork



and North Fork and Sarahsville including Kelsey's and all those by drain diggings in there and placer diggings. There was about three thousand persons including the ridges and summits and the river, altogether about three thousand persons, ~~from~~

Mr. Cadwalader. He asked you on the river, on the Middle Fork Mr. Catlin. His answer is responsive to my question

A. From there to about Sarahsville there were probably about Eight hundred

2. Now you are taking the bed of the river and the ravines and little diggings along the bank on either side?

A. That flow into it

2. Did not that population of miners exceed three thousand during the years 1853-4-5?

A. Well there might have been possibly something over that but they receded after that

2. What year was the highest?

A. 1854 I think was the



Highest

Q. 1834 would be about the highest. Now I will ask you take the mouth Fork of the American river from its junction at Deals Bar and from thence up as far as mining Extended in the years from 1851 to 1855, taking that and its immediate tributaries what was the extent of the population there engaged in mining in the river and in the ravines and tributaries pouring into the river

Objected to as not Cross Examination

A. At Negro Tree, Mormon Island, Salmon Falls, Centerville, Unionville, Coloma and Woods Diggins.

Q. Did you mention McDowell Tree?

A. I did not name that. Those diggings the ones I have named there would be about seven thousand

Q. Do you know where Placerville is situated now?

A. Yes sir

Q. Into what does that creek Empty — what is the name of the Creek



— what was the ancient name of that creek? A. Weber Creek

Q. There was a Hanytown Creek, was not there? A. Lessin

Q. Taking that and Weber Creek and the mining immediately at Placerville and Coon Hollow that discharged into Weber Creek and its tributaries, state about what the population of that section of mining country was during the year that I have mentioned say from 1851 to 1855 or 1856?

A. You include Diamond Springs and Shingle Springs?

Q. Yes, all those localities right on the margin?

A. Diamond Springs and Shingle Springs run right into the Cosumnes

Q. Include nothing except those that run into the South Fork or the tributaries of the South Fork, such of those mines as tail into or run into the Cosumnes River, omit them

A. Placerville and its surround-  
ings was about three thousand



in 1854

Q. Now state the general nature of the mining these people were engaged in during these years. State what they do in the Summer Season generally and what they did in the winter season?

A. Well, it is just as they did on the North Fork, they mined in the river in the summer

Q. The same as that detailed description you gave yesterday as regards to the mining between Rattlesnake Bar and Calfay?

A. Yes sir

Q. Now you know something about the mining in Bear river and Yuba River and the tributaries of those rivers do you not?

A. Yes sir

Q. You are also acquainted somewhat with the mining up on the margin of the Feather River?

A. Yes sir

Q. Where does the water, the debris that comes from those mines discharge with reference



to the Sacramento River

Objected to as not cross  
examination and objection sus-  
tained with privilege of re-calling  
the witness by defendant

Q. I will ask a few ques-  
tions in regard to Putah and  
Cache Creeks. From what source  
does that tule basin receive  
its first water as it fills  
up in the winter season?

A. Putah and Cache creek?

Q. There was no levee or any-  
thing to obstruct the flow of  
the water of those rivers into  
the tule basin, was there?

A. No sir

Q. Well state how ex-  
tensively they do fill the basin  
up before it receives any ac-  
cessions of water from the  
Sacramento or American river?

A. Putah and Cache creek are  
springs thrown out from the  
Coast Range and they rise  
very rapidly and fall rapidly  
Cache creek has pretty high  
banks, pretty much all the



way from Clear Lake until  
 it arrives to the tule. In 1850  
 I was there with Jefferson Wil-  
 Coxen and Jefferson Arleoxen  
 and then I saw it emptying  
 out into the tule very rapidly  
 in the flood time. That was  
 in 1853. I had business there  
 in relation to fruit trees that  
 I shipped from the East, and it  
 was a very adventurous trip  
 swimming our horses across  
 getting to that point, and when  
 I arrived there my attention  
 was called to some grizzly bear  
 in the thicket, and I had oc-  
 casion to run into the thicket  
 and I got pretty well swamped  
 and I remember the spot exactly  
 the water arrived at then in the  
 tule and I saw it about a  
 year ago which was of course  
 a great many years after,  
 twenty-nine years about, and  
 I saw the extent of the tule  
 that it had covered from that  
 time to a year ago

I just describe the extent?



A. About a mile and a half north and south and about a mile and a half east and west it is filled up.

Q. What is it filled up with?

A. Mostly loam, soil, mostly with earth.

Q. Some sand? A. Yes sir, some sand; it is good cultivable material, it is productive.

Q. Do they make it productive?

A. That portion that I first saw in 1850-1852 is all cultivated.

Q. Well, generally is it not

A. They cultivate it immediately as soon as they can go on to it. It is cultivable land.

Q. Is not that whole section covered with cullows and brush and the growth that naturally grows up in those sandy places?

A. The lower portion is sand and as it fills up further on down the loam comes on the top.

Q. The finer sand on the top?

A. The finer loam, and the sand is at the lower end also.



Q. My question is to what extent the tule basin fill up with water from the Cache Creek and Putah Creek before it receives any additions of the water from either of the American or Sacramento. A. Well it will fill up all over from one to five feet according to the depth of the tules.

Q. Through that whole tule basin } A. Yes sir,

Q. And come up into the Lisbon district } A. Yes sir

Q. How deep will it fill them

A. In the lowest part five feet.

Q. Filled up to Lisbon district five feet or thereabouts, that is before any of the Sacramento or the American River water gets into it }

A. Yes sir that is the lowest portion, understand

Q. You mean the deepest portion }

A. The deepest portions of the tule



Q. How wide a sheet of water did it fill up across generally, to what extent? does it go all the way from Knights Landing to Cache Slough?

A. No sir Cache Slough empties on this side of Knights Landing

Q. I know it does ~~not~~ is a little but is it all the way from the mouth of Cache Slough

A. Up there at Cache Slough where it empties in it is about four miles wide from the high land to the high land again and it is four or five miles wide until you reach Babel Slough and there it is only about a mile and a quarter, then it widens out again to about ten miles

Q. Well now take a winter where the tule basin receives nothing but the waters from the Cache Creek Cache Slough Putah Creek, and receives none from the Sacramento or the American where does that water discharge?



A. That water discharges into Sutter Slough, prospect slough and miner slough.

Q. Discharges at the same places that it does when it gets still higher ?

A. Yes Sir - and Cache Slough also.

Q. Describe particularly there where this change of the ~~old~~ bed of Putah Creek occurs that you mentioned yesterday, where the river has changed its course entirely to any particular place, describe it ?

A. About four miles from the Rail Road bridge at Davisville up the main Creek the water cut out a place there from the original Putah Creek, and in cutting that out it threw the water that is the current of water in high stages of water to the south and then the Rail Road Company were compelled to build another bridge and it has thrown the debris and current now to the south,



Q. Does it run there at low water

A. Well I think that the very low water runs still down the Natural Channel.

Q. Have you seen any run through the natural Channel this Summer ? A. Yes sir I saw some the other day

Q. Before the Creek raised from any rains ? A. Yes sir there was some running through there.

Q. What Where did the main body of it run ? A. I think the greater portions run through the natural stream but there is very little water any how, a very small quantity.

Q. You say that Putah Creek this last Summer ran through the Ch. old Channel do you ?

A. Yes sir I observed there was no water Crossing the second bridge I mean lately

Q. When was that ?

A. That was a few weeks ago

Q. When you passed the second bridge this Summer you did



Not see a stream of water  
running under it }

A. Two or three weeks ago I  
was astonished myself to see  
that it was all drying up,  
I saw little or no water and  
in the main Channel there  
was very little quantity.

Q. Has the bed of Putah  
Creek filled up below }

A. At Careys ranch it has  
filled up very much

Q. Has it filled up the creek,  
That is going up the Creek to  
the westward }

A. It is filled  
up of course up to near the  
mouth up to Wolfskills

Q. That is before it comes out  
of the Canyon }

A. Yes sir at  
Hutchinsons and Greens

Q. Has it filled up more  
during the last 15 years than  
it did during the 15 years  
preceeding }

A. Yes sir

Q. To what cause do you  
attribute that }

A. The washings of the mountains

Q. Well what washings of the



Mountains } A. Natural Wash-  
ings.

Q. That high water produced }  
A. Cultivating the soil, vine-  
yards and fruit trees &c

Q. Well if it was just the  
Natural Washings of the mountains  
would not it produce the  
same effect prior to 15 years  
ago } why has it produced  
more filling up during the  
last 15 years than it did the  
preceeding } A. I do not think  
it has. I think that all that  
portion of the valley where  
Woodland and all that country  
is now, I think that Cache  
Creek fills it all up. I  
think it was all a tule  
basin

Q. You are going back to some  
years ago } A. The boring of  
wells proves it showing tules  
in the bottom of the wells.  
The boring of wells in places  
shows that tules was under  
it, showing the marks of tule

Q. How deep down below the



Natural Surface now }

A Well ranging from 20 to 50 feet.

Q. You have bored wells }

A. I never have; only what I have seen

Q. I thought you said on direct examination that you had bored a great many wells }

A. Yes sir I bored a great many wells in the tule lands

Q. In boring wells in the tule lands have you noticed in going through that you come to tules ten or fifteen feet below the surface }

A. I have seen marks of tule in the Clay.

Q. How deep down }

A. Ten or twelve feet

Q. And in the neighborhood of Cache Creek you have seen it still deeper I understand you

A. I have seen what we suppose to be the decayed tule taking out from the boring and digging of wells.



Re direct Examination

J  
Wm Gwynn

Mr Cadwallader

You mean this Valley was once a lake don't you

A. Yes sir

Q. And that these Rivers ran through a Lake and raised themselves up from it?

A. Yes sir

Q. Mr Gallin asked you if Lisbon district was not composed of Swamp and overflowed lands?

A. Yes sir,

Q. You said yes. What did you mean by saying that?

A. That it was purchased from the state

Q. You had reference to the title? A. Yes sir, that is what he asked me

Q. How did the margin of the Lisbon district and Babel Slough in the matter of cultivation, timber and Inhabitancy differ if at all from the general of the Sacramento?



A It does not differ.

Q. Have those margins always been Inhabited ? A Yes sir

Q. It has always been Cultivated ? A Yes sir

Q. What Kind of timber grows on it ? A Black Oak Willow Sycamore, and White oak

Q. How far out does that timber grow with reference to Babel Slough ? A It grows out nearly to the end of Babel Slough where the Willow Comes In.

Q. It grows out nearly to this point [showing on the map]

A. Yes sir it grows out beyond that point where it is marked with a cross level,

Q. And Oak trees ? A. Yes sir

Q. Now is there timber here at Caves place ? A. There is Black Oak timber White Oak timber and Willows.

Q. How much of that 6000 acres is tule and how much marginal lands ? A Three thousand acres tule and three thousand acres



back land.

Q Mr Callin got you to say that you made deposits of material in the bed of the American River when you were mining & will ask you if you ever did during the time that you were mining there make any deposits of any material in the beds of the Rivers?

A From above the River, no sir, all we did with mining was in the beds and bars of Rivers

Q. Did you put anything on those beds or bars?

A No sir we took it from them

Q. Did you take anything out of those beds or bars save the Gold dust? A No sir

Q. You were there simply disturbing the original drift in the River?

A That is all,

Q. Was not that the character of the mining on that River?

A. Yes sir

Q. Simply a disturbance of the original drifts? A Yes sir

Q. Nobody put any thing in



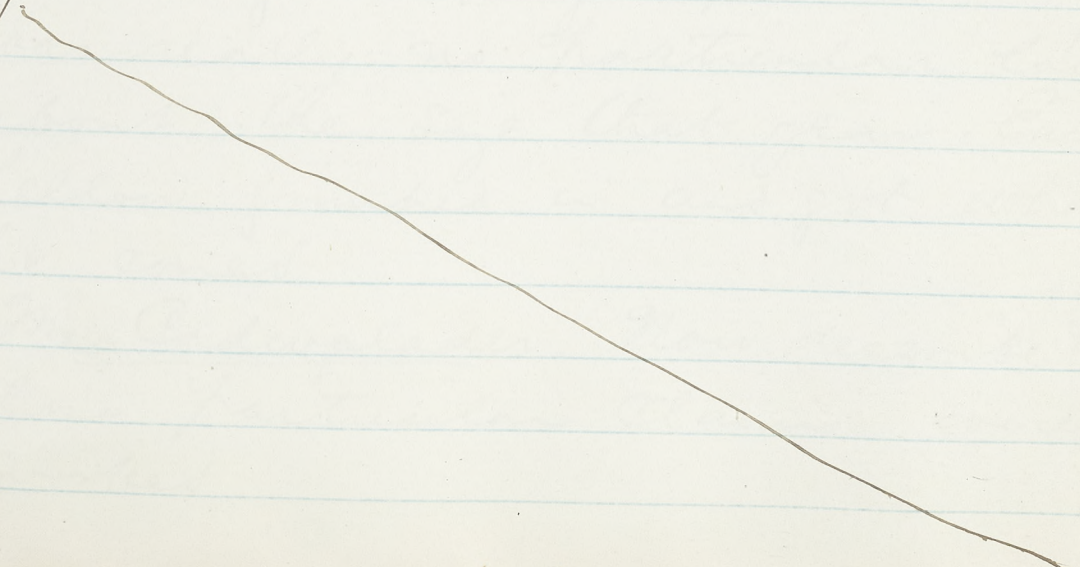
In the beds of the River but  
 what was there ~~off~~.

Objected to as leading,  
 Q. Now I will ask you this  
 question how late in the season  
 was it before mining could be  
 done in the river or on the  
 bars =

Objected to as not redirect  
 examination.

Mr Cardwallader I want to show  
 the length of time that the miners  
 spent at work in the beds and  
 bars, I want to show that  
 the miners did not go there  
 until after the waters went down  
 in the spring which approx-  
 imated about the first day of  
 June.

The Court That has been fully  
 gone into





Q. Now I want to describe the way that Munderers Bar was mined in 1849-50-51. I want to Explain that particularly, stating in the first place how it was divided into Claims and the size of those Claims?

A. In 1849 the usual mode was rockers. They would sink down —

Q. < Intg > What would be the size of the Claims on the bar?

A. From twenty to fifty feet

Q. Square? A. Yes.

Mr. Catlin. Square or running across the bar? A. There were no particular sizes. It depended on how a man got in there. The fellow that came in last took the smallest piece, while another fellow got a larger piece. There was really no particular law about the size that year. Each fellow jumped in and got what he could.

Mr. Cadwalader. Now describe how these particular Claims were worked



Mr. Catlin. Is the witness to repeat all he said yesterday. This is not redirect Examination and we object to it

Mr. Cadwalader. What I want to show by this witness is that the mining on these bars was done by digging holes with picks and shovels; that those holes would extend all over the face of the bars and the claims would be lined on the outside with the rubbish that had been taken out of the holes; that they would be sunk on the bars as far as they could go —

Mr. Catlin {Intg} I will admit right here that was the mode of mining, just as you have described it, in 1849

Mr. Cadwalader. On all the bars along these rivers?

Mr. Catlin. On all the bars along these rivers in 1849

Mr. Cadwalader. No! down to the time when they were worked out

Mr. Catlin. That I will not



admit. That can is not worked out yet

Mr. Cadwalader. That goes to show that these men did not contribute to fill up these rivers, except, as it were, by the bucket full, or by the spoon full

The Court. Ask him the extent to which they moved the earth there

Mr. Cadwalader. I want to show how they got this stuff out of those holes. What was the stripping process?

A They stripped the top off, as far as they thought it was necessary until they would reach the pay gravel and throw it on each side out of the hole

Q On each side of what?

A. Of the hole in which they were digging. Then on that they would put a windlass up, and attached to that windlass would be a rope and a bucket, and one of the miners would be down in there filling that bucket



with the pay Earth and it would be hauled up and washed in the rocks in the river

Q. What implements would he have to work with in that hole?

A. A pick, shovel and jackknife

Q. What else? a spoon?

A. Yes. That was necessary: a horn

Q. They always had a spoon?

A. A spoon, or a horn

Q. What would be the size of these holes up, say on Munderen Bar?

A. About six feet

Q. About six feet across?

A. Yes

Q. Where did the miners pile their debris which they took out of these holes? A. They piled it on the same bar, or most convenient places where it would not interfere with the hole, where it was outside of the influence of the hole they sunk

Q. They kept it on their own claims did they?

A. As a general thing, they did.



They joined together at that place and turned the water from the bar

Q. I am not asking you about turning the river; I will ask you about that in a moment. I am speaking of mining the bars. Now what kind of stuff would they take out of that hole to wash?

A. They took boulders, gravel, limestone and sandstone.

Q. I mean what sized gravel?

A. Gravel all the way from a pea up to a cobble stone

Q. I am asking the kind of earth; whether it was earth or rocks that they washed?

A. Oh; they would separate their themselves in the claim and take out the finer portion which contain the gold. The rocks would be put in the bucket separately and hauled out and thrown one side. Then as they got a bucket full of the finer material they would hoist it up and



And wash it out

Q. As you went down what proportion of the material in the hole would be rocks and what would be earth, that you would wash?

A. The earth washed would not be more than  $\frac{1}{8}$  or  $\frac{1}{16}$  of the amount

Q. Where would this earth be taken to be washed?

A. They would form a little water-course of their own construction and have the water handy for a dipper to be dipped, in working the cradle.

Q. Where would the washing be done? on the margin of the river?

A. In some instances. And in some it was on a steep declivity on the bar

Q. But where a man could reach it, if a bar?

A. In many instances they mined right up on the bar, and then they would bring the water right handy where they could get convenient to it and then



was it. Other would be done on the river. Some would mine up thirty feet from the others

2. When did the work Murderers Bar out? When did the great mass of miners leave there?

A. The left of Murderer Bar was worked out in 1851, the Summer of 1851. I think there was mining done there afterwards by different persons, more as an Experiment than any thing else. Quite a number worked afterwards there but they did not get much out of it, owing to the debris and filling up.

2. How many miners were there in 1850. 1851?

A. There were about eighty there in 1849. 50. 51. It could only work a limited number.

2. Could they work those bars until the water went down?

A. No, <sup>having</sup>

2 Now <sup>in</sup> describing the way that Murderers was worked, describe how all the other bars, commencing at Dames Bar



opposite Illinois Town and going down to Rattlesnake were worked?

A. Very similar

Q. How in regard to them having used pumps in those holes? A. That was the following year that they used pumps. In 1850. or they commenced using pumps.

Q. In these holes? A. Yes

Q. Counsel on the other side got you to say that the Bear River Ditch brought the debris from the hydraulic claims, that was put into it at Dutch Flat, way down to Rattlesnake Bar in the American River.

Can you tell me the length of that ditch and the grade of it? A. Yes, pretty near

Q. About how far would that debris have to travel from Dutch Flat to Rattlesnake Bar

A. Do you mean from the head of the ditch or Dutch Flat?

Q. No. I mean, starting the debris at Dutch Flat, how



Far woued it have to travel  
before it got to the head of the  
Bear River Ditch, and then how  
far woued it have to travel  
before it got to Rattlesnake Bar  
on the American River

A. It woued have to travel  
about six or seven miles to  
the head of the dam from Dutch  
Flat, and from the head of  
the dam taking the meanderings  
of the ditch -

Q  $\langle$  Intg  $\rangle$  Let me ask you -  
Mr. Cablin. Let the witness  
furnish his answer  
Mr. Cadwalader. I do not  
care for it, and withdraw the  
question

2. How far is it in a straight  
line from Goose Run to Colfax?

A. I showed that it was  
about eight miles

2. Now state how far it woued  
be from the Dutch Flat mines  
to Bear river and from Bear  
river down to the head of the  
Bear river ditch?

A As I stated before, from



Dutch flat to the Bear river dam it might be seven or eight miles. If you understand Bear river, that dam lies above Coalfax; it lies up river above Coalfax.

Q. How far is it from Coalfax by the way of the ditch to Rattlesnake Bar? I do not mean Coalfax; I mean Bear River dam?

A. It is about thirty five miles taking the meandering of the ditch.

Mr. Cablin By the ditch?  
A. Yes.



Mr Goodall asked Sid the Bear  
River <sup>ditch</sup> & proper ever run into the  
American River } did the bear  
River ditch proper ever empty  
into the American River }

A. It ran on the backbone  
 between the American River  
 and the plains.

Q. I mean where did it empty

A. As a general thing it emptied  
 into Secret Ravine, Auburn  
 Ravine Dry Creek and Antelope  
 Creek.

Q. Those Creeks are about half  
 way between here and Marysville  
 are they not? A. They all empty  
 in on a line from Rocklin to  
 Lincoln.

Q. That is about half way  
 to Marysville?

A. From Rocklin to Lincoln  
 is where they empty in

Q. There is where the main  
 Bear River ditch water went

A. Yes.

Q. Now what kind of a ditch  
 was it that brought bear  
 River down to Rattle Snake bar



A. Well they had some few little mines along on that side of the ridge running along into the river, and there was a time, when the North Fork dam washed away by the flood, that they purchased water from the Bear River ditches for two or three sluice heads not more than that - to mine on that bar on Rattle snake and that vicinity,

Q. You have not got my idea yet, How large was the lateral ditch?

A. Oh, It was a small ditch. It only carried probably two or three hundred inches of water. It was a branch ditch from the main ditch. There were a hundred branch ditches there.

Q. How wide and how deep would that branch ditch be?

A. I presume it would be about three feet at the top and about a foot and a half at the bottom.

Q. What was the size of the



Main ditch. }

A. The main Bear River Ditch is about 6 feet wide or seven feet wide and about four feet deep.

Q. What period of time in the last 20 years or last 25 years did this Bear River ditch Conduer or put any of this Water Into the American? }

A. Only In occasional instances, Where a man had a mine that was on that side of the River, but it would be of very short duration, He would purchase a little water simply to mine out that little mine, Those were little flats and places where the miner would buy the water, where it was an easy thing for him to dig his own ditch

Q. Where has 99 hundredths of all the Bear River ditch water gone } A. 90 per Cent of Bear River water Came down the opposite slope into those Creeks that I spoke of



Q. I asked you about 99 per Cent } A. I suppose pretty near that. At any rate at least 90 per Cent

Q. Mr Ballin asked you about the extent that they use that water for irrigation I will ask you on what kind of Country do they use it for Irrigation? that is, Mountain sides of or hill tops  
A. There are some few flats on Auburn Ravine where they use it. And also from the ditches that ran along on the summits of the mountains. There were so many branch ditches there, they would irrigate there fruit trees and vineyards they would grow from them. There are a great many of them there! fruit trees Vineyards and Orange Orchards

Q. How do those vineyards and Orchards stand in relation to the old placer dry diggings of Placer County?

A. I do not know as I understand that



Q. How are the Orchards and Vineyards of Placer County located in regard to the dry diggings

A. The Orchards were always made up on the slope, of course. They would the Ravines out, and up on the side hills and slopes and flats the trees were planted.

Q. I suppose I have got your Idea, but you have not answered my question yet. How were they located with regard to the dry diggings? That is, are they in or out of the dry diggings, what are called the dry diggings of Placer County? A There are some places that persons, that industrious persons men, have filled up with the debris and levelled it off, with their own labor, and planted trees, where there were dry diggings. They planted the flats with trees Strawberries, Raspberries and such things as that. They have planted those even where



It was mined out

Q. I want to ask you whether as a general thing they have not turned the richest of the dry diggings in Placer County into Orchards, vineyards strawberry and Raspberry beds and the like } A. They have certainly done so.

Mr Catlin None what ?

A. Where the mining ~~excav~~ was they have filled up and turned it into orchards and strawberry beds }

Q. Filled up what ? A Where the mining was, where it was mined out, they have filled a great many of those places and made agricultural land of it.

Q. Filled it with what ?

A With the debris

Mr Goodwaller. Mr Catlin asked you whether there was any mining done on the slopes of the American River, in that is, where the banks had slope on either side, just explain to the



Could the nature of those banks  
from Rattle Snake bar up!  
whether they are sharp and  
precipitous, or light?

A. Above Rattle Snake bar,  
on the line between that and  
the Middle Fork and North  
Fork, in Edwards County on  
the east side of the River,  
there are bluffs from ten to  
20 feet high running back  
ten feet and 20 feet, and  
those bluffs have been mined  
down at various points,

Q. You do not get my Idea.  
I want you to describe the  
nature of the hills that come  
down? A The hills were abrupt  
very abrupt.

Q. How abrupt? how high, say,  
on an average, from Burns bar  
down to Rattle Snake bar?

A There are many points opposite  
Auburn. There is what is called  
Hoggs diggings where many of  
the miners upon those precipitous  
mountains throw their dirt into  
the Ravine below and washed



That dirt in the River, because it paid well. Hoggs diggings was very heavy gold, and at some of those points right along side the River this material all has deposited itself by slide.

Mr Callin, You are five miles from the River now?

A. I am speaking of <sup>the slopes, of</sup> Hoggs diggings the slopes, the slopes towards the River.

Q. Hoggs diggings is over towards Pilot Hill is it not?

A. No! it is nearer the River than it is Pilot Hill by a long way

Mr Cadwallader Stated whether at Burns bar and come down River to Rattle Snake and describe the descent from the top of the divide to the River?

A. The River rises between Rattle Snake bar and Burns bar, The hills in that distance 700 feet Burns bar hills are 700 feet higher than they are at Rattle Snake

Q. How high are they at



Rattle Snake } A They are  
1100 feet at Rattle Snake, 1400  
feet at Auburn and 1800 feet  
at Clipper Gap.

The Court Are those heights  
above the river } A. No. I  
mentioned the height between  
Rattle Snake bar and Barns bar  
above the River. But those are  
sea level heights that I am  
giving now

Mr Cowwaller What would be  
the distance, on a north and  
south line, from the divide  
at Barns bar to the Centre of  
the middle fork }

A To the Junction of the north  
forks do you mean }

Q. No. From the top of the  
divide, on a south line, an  
air line, on a plane, how  
far would it be to the Centre  
of the north fork }

A To the bed of the River do  
you mean }

Q No

A To the Centre of the north fork }

Barns bar is on the north fork



Q. I understand that. I want to know how far it would be on the south line?

A. I do not think I understand you.

Q. Well suppose on a surface line. What is the descent from the top of Barnes bar on the River?

A. About 1000 feet

Q. Now what distance would that be on a surface level, north and south?

A. Do you mean from the top of the hill it is bounded by?

I do not think I understand you.

Q. I will pass to another subject then as I do not succeed in making myself understood. When you spoke to Mr Catlin about your Chinamen moving 15 yards to the man, what earth did you have reference to?

A. That was generally sand and gravel.

Q. In the bed of the River?

A. Yes.

2992 Q. After moving it you left



it did you not ?

A. Yes.

Q. You did not take it out of there ? A. No.

Q. You washed the gold out of it and then left it very close to where you dug it up ?

A. Yes.

Q. Do you know whether earth deposited with a shovel has a greater or less degree of compactness than earth deposited by water ? A. It has not that degree of compactness that earth covered by water has.

Q. But I mean earth deposited by water ? A. I say earth deposited by water has a greater compactness than earth deposited by a shovel ?

Q. Are you sure of that ?

A. Yes.

Mr Caltun How is this relevant to this case,

Mr Cadwallader In this regard:

We understand if ~~they~~<sup>you</sup> dig a hole in the ground and then throw the earth back into



it is wont fill it up because the earth deposited by water is deposited very much as sand is.

Mr Catlin We admit that Mr Cadwallader, Mr Catlin asked you about mining on the middle fork, and you went to Kelseys in order to get in the population. A. I understood his question to be about all those who contributed to the throwing of debris into the River,

Q. No, that was not the question. Mr Catlin That was my question.

Mr Cadwallader, It was your original question, I will ask you how far Kelseys is from the middle fork, the way it is travelled? A. It is probably four miles. I am not clear as to the exact distance.

Q Kelseys is on the Georgetown divide is it not?

A Yes,

Q. It is as near Coloma as it is the middle fork is it not?

A. Oh no



Q When were the bars on the Middle fork worked out and when was that Country substantially abandoned by placer miners? A. My impressions are that the middle fork — lasted much longer than almost any other River; about a year.

Q. That would bring it down to about 59 would it?

A. I think so, and there is mining going on there yet.

Q I am speaking of the bar mining? A. The bar mining is pretty much all done away with.

Q You were asked about how many miners there were at work on the south fork.

You did not answer the question. A. Yes, I answered that question. I stated how many there were.

Q. I understand you look in the ridges on both sides? A. Yes.



2. How many miners were at work down to 1858 or 1859 in the South Fork?

A. Well, from 1853-1854 and 1855 along in there, there was about Eight hundred at work in the Middle Fork, on the river proper.

2. I mean on the South Fork from the junction up as far as mining was conducted at those times?

A. Beyond Coloma, East of Coloma

2. Yes. Coloma I believe is about the head.

A. No, some above there - well I should say that there might have been in 1850-1-2, I was over there several times with a gentleman that kept store there, Mr. John T. Little of San Francisco, - I should judge in those years there was a thousand or more, working on the river bed

2. When was the South Fork worked out? A. Well, the left of it was worked out in 1854-5.

Mr. Catlin. You are speaking now



of the river bed proper?

A. Yes sir

Mr. Cadwalader. When did mining substantially cease in the South Fork? A. Well, I presume in 1857-8.

Q. Now Mr. Catlin asked you to give him an idea of the number of people at work at Placerville and you said that Placerville was situated on Haytown Creek, and Haytown Creek emptied into Weber Creek and Weber Creek emptied into the South Fork. What would be the distance by those water courses say from Placerville to the South Fork by the water courses

A. About Eighteen miles

Q. What was the mining around Placerville called?

A. Well, there was by drainie diggings and sluice diggings

Q. In early times what was it called? A. Placer diggings

Q. Well, what was the other name for it — were not they called dry diggings?



A. Oh, that is the original name  
 Q. I will ask you whether all the  
 mining in the neighborhood of Pla-  
 cerville and in the neighborhood  
 of Haytown Creek was not what  
 is called dry diggings?

A. In 1849, it was  
 Q. Well, in 1850, how was it?

A. Well, I presume it was near  
 about the same in 1850 until  
 they got the ditch in and then  
 they did not call them dry dig-  
 gings.

Q. Now describe to the Court  
 how mining was carried on  
 in what were called dry diggings?

A. It was similar to all the  
 mining

Q. Well, what was it done with

A. With a pick and shovel, a  
 spoon and horn

Q. Where was the Earth thrown?

A. Immediately close by where  
 they worked

Q. When was it worked, what  
 part of the year, there was no  
 water there in the summer

A. No sir.



Q. Every thing was as dry as a  
horn? A. Yes sir

Q. No ditches anywhere?

A. No sir

Q. Now the miners would throw  
up the earth in piles? A. Yes sir

Q. Do wash it when the water  
came? A. Yes sir

Q. Now, how did they wash it?

A. Well, after 1850 they washed  
with sluices or long pans first and  
then sluices

Q. Did they ever have any cradles?

A. They had Cradles in 1849-50

Q. What would the earth in dry  
diggings have to pay to the Pan in  
order to be considered worth washing

A. About ten cents

Q. I mean with cradles?

A. I say about ten cents

Q. I am speaking about dry dig-  
gings? A. Yes sir, they would  
work them when they paid ten  
cents to the Pan

Q. Now was the principal part  
of the mining carried on in  
dry diggings, or what in-  
strument? A. The cradle,



pick and Shovel, Pan and Horn.

Q. A pan like a milk Pan?

A. Not exactly. The rim was a different shape from a milk Pan.

Q. Hanytown Creek was remarkably rich was it not?

A. Yes sir.

Q. What was the width, the Excavation, of that Creek from End to End?

A. Well, the Excavation on a general thing would be from three to fifteen feet deep.

Q. How wide would it be?

A. Depending on the Extent of the claim.

Q. What would be the Extent of the claims in the dry diggings generally?

A. These claims ran from twenty to fifty feet square.

Q. Was that the average size of the Claims in the dry diggings in the neighborhood of Auburn?

A. They were a little larger at Auburn.

Q. How much larger?



A. They generally ran from thirty feet to one hundred

Q. The dry diggings at Auburn and Placerville were the richest in California were they not?

A. To my knowledge, excepting some few places that I knew outside, but the largest deposit of heavy gold was found in Auburn

Q. When is the debris to be found that came out of the dry diggings? Can you see it now all through the dry diggings travelling around?

A. I presume so. I can only judge from observation, I can only answer from observation

Q. Well, take the whole face of the country all the dry diggings?

A. The gravel and heavy sand cones remain there but the finer stuff in the heavy rains naturally comes wash from the ravine into the Creek and from the creek into the Cañon and from the Cañon into the river

Q. Well, where would those



heavy stones be?

A. They would remain there

Q. What I ask you is this: whether in travelling through there at this late day you do not see that old debris just about -

Objected to as leading

Q. How were the Long Tons and Shucis set, on what?

A. On rocks or anything they chose to set them on, at a grade of about one foot to every twelve feet, sometimes greater but that was the usual setting

Q. Can't you describe the appearance now of one of the deserted dry diggings of California?

A. Well, the appearance of a deserted dry diggings is mounds of gravel and sand and holes - rough - very rough and difficult to walk over; you have got to walk around each one, a hole here and a hill there and a hole there and a hill there all interspersed with holes and hills of gravel and sand

Q. So the bed rock apparent



Where it was washed down to?

A. - In places. Some places it has caved in

Q. How in regard to the places where the sluices and long toms were set? A. They would be set on benches

Q. Well, I mean how in regard to finding the places in the dry diggings where the toms and sluices were suspended? A. I find them by the pillars standing like this post (referring), pillars where they sat on, and a logth would rest on one pillar and a part on the next

Q. What would be about the diameter of those, about the width of the sluices?

A. Generally about 18 inches to two feet wide square according to the light and grade they ran

Q. Now they have resisted the action of the elements for the last twenty five years have they not?

Objected to as leading



2. State whether they have not assisted the action of the Elements for the last twenty - five years?

A. That is a hard question to answer. I believe instances they have, but in some other instances they have not.

2. When were the dry diggings in the neighborhoods of Auburn washed out? A. They were effectually washed out in about 1855.

2. Is that true in regard to all the other dry diggings of which you know anything?

A. It runs about the same.

2. What year did those Mining Counties, if at all, lose the greater part of their population?

A. You mean the mining population. Well, it commenced decreasing from about 1855 down all the way 1856 and 1857 decreasing, and going into other business.

2. Well, when you get down to 1860 and 1861 what proportion of the miners had left



those counties?

A. Well, eighty or ninety per cent.

Q. The population that you estimates as being enjoyed in the Smith Fork included all the contiguous mining territory, did it not?

A. Yes sir, that is my estimate.

Q. It included Coloma?

A. Yes sir.

Q. And Placerville?

A. No, I do not think Placerville was included in Coloma. I think that was afterward, separate. That is my recollection. Placerville was a very large place at one time.

Q. At what height from the river, as a general thing, are the deposits that the hydraulic mines wash into the American and Middle Fork rivers — how high would be the hydraulic mines say at Gold Run above the American River?

A. Gold Run would be twelve



a thirteen feet above the bed of the river

Q. How high would be those mines tailing into the North Fork?

A. I may be a little out of the way, but I am not certain

Q. That is pretty near. How would it be on the other divide?

Objected to as not re-examination

Q. Give us the altitude of the deposits that have been worked on the divide between the Middle and North Forks?

A. You mean the divide between the Middle and North Forks, the altitude?

Q. Yes, both ways.

A. Michigam Bluffs, Jods Valley, Iowa Hill, Forrest City and those places above the River bed?

Q. Yes.

A. Forrest City is about 1600 feet above the river bed

Q. How would it be in the other places, Michigam Bluffs and Iowa Hill?

A. Well, I think that they would be 100 or 200 feet



lep.

Q. How comes it to be when you get down to Tads Valley?

A. That comes to be probably 100 feet less - probably 1300 or 1400 feet

Q. What is the width of that back bone between the Middle and North Fork?

A. That depends on how high you run up

Q. On the top of the divide?

A. On the top of the divide - well the trouble is you do not get to the top of the divide

Q. Is it wide or narrow?

A. It is twenty-five miles wide about the center of it

Q. What place?

A. Well, taking a line from Michigan Bluffs right across in the same direction

Q. Well, what I want to ask you is whether there was not a slope either way from what is called the back bone?

A. There is a slope from all



those points toward the two  
rivers. But if you go a little  
beyond that, it gets wider as  
you go further north.

Mr. Catlin. Twenty-five  
miles at the widest or nar-  
rowest? A. I thought  
he asked about where those  
mines were, in a straight line  
across from one river to an-  
other.

Mr. Cadwalader. Now, what  
I asked you was how wide  
was what is called the back  
cone of the divide?

A. Well, that comes in  
ranging from one mile to  
three miles wide. What is  
called the back cone going up  
between the two rivers as  
you go higher up it keeps wid-  
ening and widening all the  
way as the river extends.  
It is a difficult question  
to answer. The map would  
show that more correctly  
than I could give it.

2. Now describe that kind



of hy draulic mining that you said was carried on down at Rattlesnake Bar, how long it lasted and how much water was used?

A. Do you want to know from the first mining at Rattlesnake Bar, what water?

Q. I ask you if the first place, if you said there was ever any hy draulic mining at Rattlesnake Bar, when it commenced and when it ended and how it was carried on?

A. It commenced as near as I can get at it about 1854, hy draulicking a' a small way.

Q. Well, how long did it last?

A. Well, it lasted till 1858 or 1859 and some in 1860.

Q. How much head did they use?

A. That depends on what year. The first year they used the water from Bear River before the North Fork Ditch was



Completed, in a small way.  
After the North Fork Ditch  
was completed, they took on  
almost, from 1855 to 1860,  
the whole water of the ditch  
for Rattlesnake Dam for a  
year or so

Q. How much of a head  
do they have? A. They  
had about fifty feet fall  
from the reservoir.

Q. How was the water  
applied to the bank?

A. Applied from above with  
a pipe

Q. What kind of hose?

A. Of duck, a four or  
six or eight inch hose with  
a pipe at the end of the  
hose.

Q. What kind of pipes?

A. Generally an iron pipe,  
sheet iron or boiler iron  
pipe

Q. How much of a nozzle?

A. Generally about one inch  
or two inches according to  
the nozzle water



Q. Do you know how much Earth then an inch of water displaced? A. Well, of course that depends on the fall and the size of the nozzle.

Q. Well, I mean at that time with this inch, inch or a half or two inch nozzle (question withdrawn)

Q. When did that mining cease? A. About 1858 and 1859, the last End of it.

Q. How was the head <sup>in</sup> how was it carried on toward the East part of that time?

A. With a less number of pipes. The main portions of it had been worked out but there were some about there in 1860 working in the same manner they had worked.

Q. With larger heads there and a smaller number of men? A. I think not.

I think about the same

Q. Where did this mining leave the cobbles that were taken



out of this bank?

A. Into the river

Q. How long was the sluice way?  
A. From one hundred feet to six hundred feet

Q. What was the grade of it?  
A. The grade was about eighteen inches — an inch and a half to the foot about

Q. That was the grade of the sluices?  
A. Some were greater and some were less — there was none less than that some greater.

Q. In that hydraulic Mining that you speak of did they use ground sluices or wooden sluices?

A. They used wooden sluices

Q. Twelve inches wide?

A. Less or more than that

Q. How wide

A. They were from eighteen inches to two feet

Q. How deep?

A. About sixteen inches



Q Did they use sluice forks in them ? A Yes sir

Q To take the stones out ? A Yes sir.

Q. Then the stones did not go in the River did they ?

A. That was only where they lodged they used the forks where they lodged. Sometimes they would move a heavy rock out so as not to stop the main portion

Q. Now you were asked about Putah Creek ? A Yes sir

Q. Do you know where the celebrated Briggs orchard is ? A. Yes sir

Q. Where is that ? A. It lays below Davisville, I think it is south of Davisville.

Q The Rail Road bridge crosses it does it not ? A Yes sir.

Q. Do you pretend to say that Creek has filled up any abreast of that ranch ? A The bottom of it — Yes the bottom has filled up in the last 25 years.

Q. What is the height from the top of the bank to the bottom



Of that Creek at that place?  
 A. On the left side as you go  
 from here down where the Rail-  
 Road bridge crosses it, it is  
 about 25 or 30 feet

Q Did you ever see it any  
 deeper than it is now?

A Yes sir

Q Did you ever see any  
 more water running in it than  
 ran it last summer?

A Yes sir I think I have

Q How is it opposite Arm-  
 strongs place just above Briggs  
 Orchard? A The banks gets  
 steeper as you go up to the  
 mouth.

Q Has there been any fill  
 there? A There has been a  
 fill at the mouth after coming  
 out from Wolfskills.

Q That is after getting down  
 below Briggs Orchard

A Nearer & to the mountains  
 nearer to the foot hills

Mr Cutlin When you speak of  
 the mouth you speak of where  
 it comes out of the Canyon



A Yes Sir I mean at Larue's place.

Mr Casanallader Larue is up on what is called the big Ranch of Hutchinson and Green ?

A. A Portion of it.

Q. That is only three miles from the Rail Road

A There at his place the water has broken over and gone south

Q. It broke over on the other side did it not ? A Yes Sir

Q That is simply a high water escapement is it not ?

A Well the debris coming down from the mountains filled it up so that the water washed over there and went southward In the high water the head of the water went out there, And I think after the water subsided then there was a very small quantity of water and the place being so small I think the most of it ran down the original Channel

Q. Does any water escape over of that Creek at less than



a ten foot stage in it —  
have you been there ?

A. Yes sir I could not say  
about that, I think it required  
considerable water to run out  
it would have to raise con-  
siderably before it would run  
over.

Q. There is a kind of swale  
there where it broke out —  
It broke out in bend and  
runs out into a swale ?

A. Yes sir during high water  
the most of it runs through  
It carried the debris.

Q. How long does it take the  
water to run out after it com-  
mences to rise ? suppose there  
is a storm in the Coast Range  
near the head of Putah how  
long will it take that Creek  
to come up and go down ?

A. After the storm subsides 24  
hours.

Q. How is it with Cache Creek

A. Cache Creek takes a longer  
time. It would take two days  
or three days because it is a



lunger stream

Q. Do you know anything about what is called Reeds Canal through the tules do you know when that was dug?

A. Well I do not know the name of the Canal I presume it is the same one that the Rail Road crosses it was built in 1866.

Q. And that runs right down through the Centre of the tules does it not? A Yes sir it runs to Duck Lake.

Mr Callin What year was it built? A. In 1866. My recollection was, I may be wrong Mr Cadwallader What are the dimensions of that Canal

A. It is about ten feet wide and about three feet deep

Q. Was that not built to carry off the waters of Cache Creek

A. It was so intended by the levee Commissioners.

Q. Is that not still an open water course and do not all the summer waters in the tules



run through it ?

A. That was the intention of it but I think it has become filled up with bars across it, with sediment.

Q. Can you recollect where it has filled up in any places ?

A. Yes It is filled up back of Taylors Ranch out at the end of Bobel Slough.

Q. How far below the Rail Road is that, South of the Rail Road ?

A. About ten miles.

Q. You do not know anything about the upper end of it ?

A. I think it is pretty much open as far as I have been along there. I came along in a boat

Q. Mr Cutlin asked you about the action of the water on that tule soil. Do you know the kind of material of which the Lewis toll road is constructed ?

A. Yes Sir

Q. & What is it =

Question objected to

2018

Mr Cadwallader I want to show



That the toll road is a winter road through the tules starting at the English break?

A. The tule soil is of an adobe soil clay there.

Q. Is there any wash to it?

A. Only under extreme pressure at high water and with a very rapid current, very little wash.

Q. What is the Lewis toll road composed of? A. Well that that runs through the tule is of that same material, adobe clay.

Q. Is that a winter road across the tules? A. It was so intended, it was built for a winter road.

Q. Has it served that purpose?

A. It has as a general thing except at extreme high water.

Q. Well say since 1862. State whether it has been an open road? A. It has been an open road except when the water was too high in the tules and that stopped travel then for sometimes for sixty days but



As soon as the water subsided they could travel it again probably they travelled it nine or ten months in a year. Some ~~weeks~~ winters they could travel possibly all winter, mild winters.

Q. Is it not a winter road?

A. It was a winter road for some years but not every year. It was intended for a winter road. The water has been so high lately that they have not been able to travel it. Mr Cadwallader that is all with this witness with the exception of asking him some time before this trial is closed to go on to these bars in the American River, the mouth of the River to find some stuff that he considers like that that first came down the River in 1858.



Re cross  
Examination  
of  
Wm Gwynn

Mr Catlin

Can you state at that  
what the depth of the deposit  
of tailings from sluice mining  
and hydraulic mining was  
~~at~~ in the mouth of Webber Creek  
at its entrance into the South  
fork. }

A. You mean the excavations  
that were made.

Q. I mean to ask you if you  
can tell what the depths of  
deposits of mining tailings is  
in the mouth of Webber Creek  
at the point of its entrance  
into the South Fork —

Objected to as not Cross  
Examination.

Q. So the dry diggings that  
you speak of border on the  
slopes of Webber Creek }

A. Yes Sir

Q Now I will ask you what  
is the depth of the tailings



In the bed of Webber Creek  
Commencing say at the point  
of entrance into the South fork  
River } A. You mean after it  
is mined out }

Q. I am asking you if you  
know what they are now }

A. No sir I do not know what  
they are now

Q. Do you know what they were  
ten years ago } A. I have an  
idea what they were then.

Q. Give us your idea, is it an  
idea founded upon personal  
knowledge } A. Only from riding  
along on the Creek Horseback

Q. When was the last time that  
you rode along on horseback on  
the South bank of the South  
Fork at the mouth of Webber  
Creek } A. My remembrance is  
about the year 1870 or 71

Q. How deep was it at that  
time, how deep were the tailings  
in the mouth of Webber Creek  
at that time } A. Well I can  
only give an approximate idea  
that is all,



Q. You said you had an Idea and that Idea was founded upon personal Knowledge?

A. In riding along there I should judge in many places it was from one to ten feet deep.

Q. Where were you riding merely crossing the Creek on the road? A. No sir there is a road follows mostly up the Creek if you remember.

Q. Where did those tailings come from, those deposits?

A. They came from the Ravines making into that Creek and Slopes.

Q. It was on the slopes of these Ravines where these dry diggings were? A. Yes sir.

Q. Where did they get water to wash those dry diggings?

A. Well they had to do the best they could before that ditch was brought in.

Q. After that ditch was brought in then they washed from that ditch did they? A. Yes sir.

Q. When was the first ditches



brought in there by which the miners were supplied in the dry diggings in the neighborhood of Hong Town Lion Holler and Webber Creek. A. I think that the first ditch that was brought in there in 1855 and 6, that is before they got the Coloma ditch that you spoke of.

Q. Was not there a claim Coloma ditch as early as 1851 and 52?

A. There might have been I am not positive, I know the was running when I have been over there in 1854-55-56, I am not certain.

Q. What ditch? A. The Coloma ditch. Mr Van Galby was the Superintendent.

Q. This name of dry diggings was not used after the waters came in from the Canals and ditches?

A. No sir

Q. You mean by that it was called dry diggings because there was a scarcity of water? A. Yes sir they could not wash it without water.



Q. Were they not in the habit during the summer season or in the fall when there were no rains, of ~~taking~~ digging out the beds of the ravines and the slopes and filling it up?

A. Yes.

Q. Then when the got the water they would wash that in tons and sluice into the ravines, would they not?

A. Yes. During those times of low river they would take sieves and sift it.

Q. Now I ask you whether during the heavy rains in the mountains those ravines do not carry torrents of water?

A. Large amounts of water.

Q. They rise quickly I suppose.

A. Yes.

Q. And discharge quickly afterwards?

A. Yes.

Q. Is the rain fall in the mountains heavier or lighter than they are down here?

A. It is heavier.

Q. How much?



Q. Three times as great

Q. What is the rain fall of what we would call a rainy winter? Say in the mountain region of Nevada, Grass Valley, Iowa Hill and Placerville?

Mr. Cadwalader. We object to that as new matter

Mr. Cablin. This tuler Canal; does that substantially drain the tules when there is water in the tules? A. No.

Q. Was not that constructed before 1866? was not that constructed before the big flood?

A. - I think not. I think it was commenced immediately after the General Union was one of the Commissioners and some other gentlemen, and Carey took the contract to construct that I think in 1866

Q. You started in to describe the depth of the Excavation in the bed of Haytown Creek. Mr. Cadwalader asked you how wide that would be up and down the Creek. You did not answer



Chat.; answer it now. You said, they excavated Haytown Creek from one to fifteen feet in depth; what width?

A That creek was at first a narrow creek, but as the material was thrown into the creek from the sides from those ravines of course it widened out very much. It has become very wide, and there is a roadway along side of it now and has been for several years.

Q Now give me about the width of it?

A. I should think that creek in places was all the way from fifty to one hundred and fifty feet wide

Q The bed?

A Yes. It has become that wide

Q Now when these three thousand miners were mining in the bed of the river which you first described, between Calfax and Rattlesnake on the North Fork, and the several



thousand miners were mining in the bed of the South and Middle Forks, they dispersed a certain amount of earth and left it lying there. What would be the effect of the winter floods upon that earth? A. To bring it farther down the stream.

Q. As it originally lay, in the bed of river, it was very firm and compact was it not?

A. Yes.

Q. The effect of the mining was to heap it up and leave it in that loose condition?

A. Yes.

Q. So that when the winter floods came they washed it down the river? A. Yes.

Q. What was the average width of the bed of the North Fork in this section between Calfax and Rattlesnake Bar in those years - 1851, 2, 3, and along there - when this river mining was ~~done~~ carried on?

A. At every low stage



of water —

Q. < Intg' > The bed of the river would be the same whether the water was high or low, would it not? just give me the average width of the bed of the river in which this mining was carried on.?

A. About two hundred feet at low stage of water.

Q. In the summer season is what you call the low stage?

A. Yes

Mr. Cadwalader. I want to ask you whether this deposit at the mouth of Weber Creek was not principally cobble stone and heavy gravel?

A. No. Principally gravel.

Q. What? A. Principally gravel; small gravel and sand

Mr. Hart. We wish to call Mr. J. L. Foul's simply for the purpose of proving a single fact. And as he is Superintendent of the Mining Claims of the de-



Defendant we shall insist on  
the strict rule in regard to  
cross-examination.

" "

Testimony  
of  
J. L. Gould

Called for Plaintiff.

Room.

Mr. Hunt. You are the Super-  
intendent of the Gold Run Ditch  
and Mining Company, the  
defendant in this case, are  
you not? A Yes.

Q. State where the hydraulic  
mining claim of the defendant  
referred to in the pleadings in  
this case, is located?

A. It is about one mile  
from the North Fork of the  
American River on Indiana Hill

Q. And where with reference  
to Cañon Creek?

A. It is west of Cañon  
Creek.



Q. On the side hill?

A. On the side hill.

Q. Next to Cañon Creek?

A. Yes

Q. What is the extent of that claim? That is, of the claim itself. Not what has been worked, but of the claim of the Company?

A. I believe it is about fifty acres.

Q. Fifty acres?

A. I think so, I am not positive

Q. Can you describe it by reference to natural monuments or boundaries?

A. On the north it is bounded by the Gold Run Hydraulic Claim Limits.

Q. Run by the same Company?

A. No. And on the south by the Indiana Steel Mill and Mining Company; on the west, or on the south west, by the bluff the vacant ground; on the East by the hillside and Cañon Creek.

Q. About what length does



It run upon the mesa on which it is located, up Cañon Creek? or does that mesa run up Cañon Creek? A Yes, it runs up Cañon Creek. I showed that twelve hundred feet

Q. Twelve hundred feet is the limit of the claim? A Yes

Q. Of the ownership of the Company, not the amount that been worked? A I understand you

Q. The claim itself? A Yes

Q. To what extent does it run back from the Creek, on the ridge?

A. It is about twelve hundred feet, I think in length, this claim is; And from where the surface has been washed, perhaps.

Q. (Intg) You need not state the washing surface. Just state the limits of the claim

A. Perhaps twelve hundred feet

Q. Twelve hundred feet up the Creek?

A Yes. And back and across

Q. Twelve hundred feet? A Yes



Q Is it square? A. I only speak approximately. I do not know the exact distance across that. It is somewhere in that neighborhood.

Q The hill you say is Indiana Hill? A. Yes.

Q. Did you point out that claim to Grunsky of the State Engineer department when he was up there? A. Yes.

Q. Also to Cosby and Allard?

A. Yes.

Q. Have you ever pointed it out to Hall of the State Engineer department?

A. I do not remember that I ever did.

Mr. Hart. That is all for the present, we may want to call this witness again

— " —



# Testimony of William H. Hall

Called for Plaintiff

Suorn

Mr. Hart. Where do you reside?

A. In Sacramento

Q. Are you holding any official position?

A. I am

Q. What is it?

A. The office of State Engineer

Mr. Hart. I will announce here that we call this witness to out a single fact now, reserving the right to call him as an expert some other time

Q. How long have you held that office?

A. Since May 1878

Q. Do you know where this diagram was made (showing)?

A. That diagram was made in my office

Q. Do you know whether it is a correct diagram or not?

A. I do know that it is



Correct.

2. A correct diagram of what it purports to represent?

A. Of what it purports to represent

2. By whom was it made?

A. First of all allow me to explain what it purports to represent. It purports to represent the outline of the washing on the Gold Run Ridge in Placer County. The survey from which that outline was marked was made under my direction by Boschke who was then Assistant State Engineer. The map was roughly sketched by him in my office. The marking upon the map was made by Krig, draftsman. The whole was done under my direction and with my knowledge of the conduct of the work in detail.

2. State whether or not you have ever made a calculation of the amount of matter taken from Gold Run Ridge, located



old washings  
Amur



An Cañon Creek? A. I have  
 2. What amount did you make  
 it? A. I visited that  
 Ridge in August or September  
 1879, and at that time learned  
 for myself, by inspection and  
 by inquiry of those engaged in  
 mining there and by exam-  
 ination of maps of the ground,  
 about the extent of that min-  
 ing work. And I made this  
 note as the result of my  
 calculation examination:

"The old washings before the  
 "Recent bed rock tunnels were  
 "run covered an area of about  
 "five hundred acres and the  
 "depth washed off averaged, ac-  
 "cording to the best information  
 "I could get, about sixty-five  
 "feet, which will make the  
 "total amount washed, fifty  
 "two million, four hundred and  
 "forty thousand (52,440,000)  
 "Cubic yards. This is exclusive  
 "of the washings recently carried  
 "forward and which go to a  
 "greater depth."



Q. Fifty two millions?

A. Yes, in round numbers

Q. Did you notice at that time the location of Cañon Creek with reference to the ridge known as Gold Run Ridge?

A. Yes.

Q. Now describe that to the Court as well as you can. That is, the location of the ridge from which this stuff was taken, and of the Creek.

A. The ridge runs in a South-Easterly direction from the Railroad crossing of the gravel deposit, about half a mile East of the town of Gold Run. The Cañon heads further to the East and crosses parallel to the railroad until it comes to the base of this ridge and then runs parallel with it in a South-westerly direction — as I should have said instead of South-east a while ago — to the North Fork of the American River, probably turning



a little more to the south before reaching that point.

Q. That is the ridge, you say?

A. No, that is the Cañon

Mr. Hart. I will offer this now as a diagram in the Case for the use of The Court when the witnesses are testifying (marked Diagram A. Plaintiff)

Q. What is the length of that hill?

A. The length of the washing is about two or two and a half miles

Q. Along the ridge?

A. Yes

Q. Did you state how far the ridge is from Cañon Creek?

A. I did not.

Q. State now.

A. The top of that ridge was probably about twelve hundred to fourteen hundred feet from the bed of Cañon Creek

Q. What direction?

A. At right angles from the



direction of the ridge, or ~~is~~  
a south-easterly or easterly  
direction

2. Downward? A. Horizontal

2. About how much higher was  
the top of the ridge than the  
bed of the creek?

A. I have no definite knowledge  
of that

2. Can you make an estimate

A. It would be only an estimate  
on my part, but I should judge  
that the top of that ridge be-  
fore it was washed away was  
from 500 to 600 feet higher  
than the bed of the creek, im-  
mediately adjacent to it

2. Running from the top of  
the ridge as you saw it, down  
to the creek, what was the  
nature of the bank or the  
side of the mountain, what  
was the incline?

A. The inclination of the side  
of that ravine is very precipitous.  
The rate of inclination would  
vary from  $30^{\circ}$  toward the  
top portion of the ridge left



Standing to may be 60° down  
near the bottom of the ravine

2. How far is the base of the  
ridge from the bottom of the  
ravine?

A. The base of  
the ridge constitutes one side  
of the bottom of the ravine,  
so that it is immediately ad-  
jacent to it

2. Does the hill run up in  
the manner (in the manner)  
in which you say, directly  
from the bottom of the ravine  
to the top, or are there any  
table lands between?

A. The Deposit there was I  
judge very much broken up.  
Nevertheless it was probably  
a continuous rise from the  
bottom of this ravine to the  
top of the ridge. There was  
no table land of any consider-  
able amount intervening



Q Do you know the fall of the Creek, Canyon Creek along this ridge? A. I do not of my own knowledge.

Q. Can you make an estimate of it from your ~~own~~ knowledge saw? A I know it was a very precipitious Creek.

Q What ~~of~~ would your estimate be of its fall per mile?

A. Well upon my word, I hardly have sufficient knowledge of that to make an estimate of its fall. It is a very precipitious Creek ~~Q.~~ from the point where this particular mining washing enters it down to the outlet into the North fork of the American River; a very precipitious Creek, above that it is not so much so; it flattens off.

Q Now where does Canyon Creek enter? where does it flow on? A It enters the North fork of the American River.

Q About how far from Gold Run ridge? A. From what portion of Gold Run?



Q. The Gold Run Mine Indiana Hill ? A. About three quarters of a mile or a mile from this mine.

Q. What was the nature of the Country back of the ridge from the Creek ? A. There was higher land — that is, to the North West of this ridge. The opposite <sup>side</sup> from that upon which the Creek is there is higher land, a higher hill.

Q. How far did that higher hill extend up and down the ridge ? A. It extended for the greater portion of the length of the ridge that I have given, or probably for three quarters of the ridge.

Q. What portion of the ridge did it extend along? that nearest the river or that farther back into the mountains. A. About the medium portion of the ridge.

Q. What was there at the other points next to the ridge where this hill was not ?



A. My recollection of the topography is that at the northern or North eastern end of the ridge the land dropped off and became lower than the ridge — itself North of Gold Run and North of the Rail Road, and that at the southern or South western extremity of the ridge the higher land turned away more to the west and probably left a ravine bordering the ridge on the west or south west.

Q. You did not see the Ravine ? A. I did not.

Q. When were you at Canyon Creek ? A. I was there in August or September 79

Q. At that time did you see any tailings or dumpings left near the Creek, ?

A. Left near the Creek }

Q. Or near any of those mines on the ridge ? A. On the ridge well, this ridge, as it existed, at that time, was a mass of roughly excavated gravel and



Boulders,

Q On which side were the excavations which you saw  
A. The excavation generally extends through the Centre or medium portion of the ridge, leaving a bank on either side.

Q. Leaving a bank on either side. } A. Leaving a bank or a slight bluff of gravel on either side; the higher bluff being on the Western side and the lower bluff on the eastern or South eastern side.

Q. Could you tell from looking at those Cavities where they discharged their tailings

A. Not from looking at the Cavities, but from examining the Creek. The material, as I understand it, is run out through tunnels, dropping down

Q What I want to get at without going into this question at this time is whether or not you saw any dumps. Did you see where there were any dumps



used by any of these mines  
A. Yes.

Q. What did you find at the  
dumps? A. Principally large  
Pebble stones, boulders

Q. Did you find any Considerable  
deposits there? that is as com-  
pared with the size of the  
pits, for instance, from which  
they had been taken?

A. I did not examine, I can  
speak only with reference to  
Canyon Creek,

Q. That is what I am speaking  
of? Canyon Creek.

A. Now, with reference to Canyon  
Creek, the lower portion of  
Canyon Creek was at that time  
quite free from gravel and  
sand deposit.

Q. You are not speaking of  
the bed of the Creek or the  
water. You are speaking of the  
side, of the dumps?

A. No. I am speaking of the  
bed of the Creek.

Q. I am speaking of the  
dumps. I do not want to



Examine about the bed of the Creek and move to strike that out. } A. Well the dumps are in the bed of the Creek except some of the old dumps or dumps from the original surface washing. The dumps from the washings of recent date are in the bed of the Creek.

Q Now at the point where you noticed that the hill had been first mined down, you say subsequently to that pits had been made }

A. Yes.

Q Now you say ~~to~~ how was that Hill mined off first before they commenced making these pits } Could you tell from looking at the top of the hill what had been done with it } A. Yes, I could tell, This Hill was a ridge extending through in this direction, you may say [showing], with the Creek following parallel here. The lower portion the



South Western portion of that ridge, had been mined off by short tunnels or open cuts running the material into a little ravine that entered the North fork of the American River probably a half mile below where Canyon Creek enters it. The middle and northern portion or northeastern portion of the ridge had been mined off by short tunnels or open cuts entering the hill from the slope towards Canyon Creek Ravine, and the material ran off in that way into the ravine.

Q Now I want to get at this and I will ask the question in leading form: Did they mine it in such way as to make a plane of the top of the hill there

Mr W C Belcher I think that is objectionable.

A. The general appearance of this old mining ground ~~was~~ that of a ridge, the body of



Which had been cut out longitudinally, leaving a bank on each side, with many hills and rough places through the body of it, the surface of the bed washings being as a general rule a plane but very rugged and broken up by intervening hills and ridges of gravel that had been left by the original washings.

Q. Now how far up the hill or ridge this did you say this original mining had extended? A. It had extended up to the Rail Road line.

That ridge originally extended past the Rail Road and over towards what is known as Dutch Flats, so that the ridge that I have described, although it constitutes the ridge, known as the Gold Run ridge, is not all of the ridge of land which once existed there, in length.

Q. Where is the ridge with reference to the Rail Road



North or south East or West } A. South a south West point where the Rail Road Crosses it,

Q. You said that fifty two million Cubic yards you estimated had been taken off before the lower or deeper excavations commenced } A. Yes

Q. Have you made any Calculations as to the amount which has been taken out of that ridge since the lower or deeper excavations commenced } A. After the examination that I made I had surveys made of the outlines of these old washings. The result of that survey is represented upon this map plat which has just been submitted. And, farther than that, I had surveys made of the excavations known as the Indiana Hill washings and the Cedar washings.

Q. Now from those surveys



Amount of Material



There was afterwards Calculated the Amount of material washed off in the Original washing and the Amount of material washed off in the Indiana ~~deep~~ Hill deep washing and the Amount of material washed off in the Cedar deep washing.

Q. What was the amount in addition to the \$2,000,000 Cubic yards. }

A. At this time I have not any memoranda with me from which to give that information, I have that Memoranda in the office but I did not bring that with me; the result of that

Q. Was there any place from which or to which the debris and Tailings of these several Mines could have escaped except Canyon Creek }

A. So far as I know there was no place where they could have escaped.

Q. Except into Canyon Creek.



A. Except into Canyon Creek

Q. Do you know whether or not any considerable number of them did dump into Canyon Creek from what you saw on the ground?

A. I do not know except what I was told of the former working of the mine. You speak now of the ~~deep~~ washings or surface washings.

Q. Yes } A. I do not know except what I was told of the former workings of the mines, and from the appearance of old tunnels through the rim or edge of the banks that were left standing and the little dumps that were visible on the side hill sloping to Canyon Creek



Q. Where did you find those tunnels? A. On each side; on the east or southeast side of the washings

Q. Running towards?

A. Inty Y Cañon Creek?

A. Cañon Creek

Q. How many of those tunnels did you find running through the rim? A. That is impossible for me to state. I saw a number of them - little tunnels that had been caved in, and little open cuts. I have seen a dozen or two dozen of them in walking about; but I made no account of them

Q. Was there any other place within that rim through which the water and slickens and mud, sand, rocks, gravel, and tailings generally, could have escaped, except through those tunnels

Mr. Mc. Belcher. He said that he did not know

Mr Hart. No, sir. He did not



say so

Mr Hart. Within the pits, that you saw there? A. I made no examination that would enable me to say definitely that there were no places through which the water and the sand might get off - escape, but I did not see any place in the course of the examination that I did make.

2. If there had been any tunnels there other than the ones running towards Canon Creek would your examination enable you to see them? A. I think it would.

2. Now what did you see in regard to those tunnels that indicated to you the purpose for which they were used? A. The appearance of these little tunnels generally was that of a very much dilapidated hole in the face of the gravel bank with decayed timbering about their mouths and some-



times they were caved in, that is, the mouth or head of them at the point of working out the gravel. At the lower points there was below the openings of the tunnels or cuts a pile of loose stone, gravel, and sand, as though it had formerly been a dump.

2. Did it look like a natural formation of the ground where you saw this gravel and sand, or did it look as if it had been placed there?

A. It looked like a mining dump.

2. A Mining dump? A. Yes.

2. Could you tell from the appearance of those dumps the process by which they had been placed there, whether by the water or otherwise. Did they have any appearance or any evidences?

A. My judgment is from what I saw that they had been placed there by the action of running water.



2. Did they have any evidences of that? A. Well, I was so well satisfied in my own mind that it had been placed there by running water that I did not make any examination to see whether there were evidences of it. The forms of the dumps were the forms of dumps made by running water.

2. Did you make this sort of an examination of all the pits on that ridge?

A. I did not.

2. How many pits were there if you remember?

A. The whole ridge bears the appearance of one big pit. The little tunnels that I spoke of or former open cuts, as the case may be, were many in number. I did not count them, nor did I count the number of the dumps that I saw, so I cannot say how many I made an examination of. I saw them casually in



examining that mining region

Q. Who showed you over the ground there? A. There was a Mr Caldwell, as I remember his name, who was an old miner in the Dutch Flat and Gold Run country, that I think showed me more than any other one person. I made inquiries too among the miners and friends generally.

Q. Did you see Mr Gould?

A. My recollection is that Mr Gould returned to Dutch Flat from some trip away after I had made my principal examination of the country. I met Mr Gould there.

Q. Did you examine the dump of the Gold Run Mine, the mine now in controversy, about which this litigation is pending?

A. Well, I saw the outcome of the tunnel, but I did not see - the outcome of the tunnel into Canon Creek, but I did not see the outcome of



Cañon Creek into the American River

Q. Now where was the dump of the Gold Run Mine?

A. The dump was at the lower end of the tunnel in the Cañon Creek ravine, there is where the material dropped out of the tunnel into the ravine, but beyond that point, down the ravine, I understood, although I did not see them all, that there were a number of undercurrents in which the gold is saved, so that really it might properly be said that the dump of this mine or the point beyond which they cease to try to save the gold is near the mouth if not actually at the mouth of Cañon Creek in the river

Q. About how far up from the creek did you find the mouth of the tunnel through which the debris was carried?

A. How far up from the creek?



2. Yes. A. From the bed of the creek?

2. Yes. A. In altitude?

2. Yes. A. Well, I saw that from the hill above, it is a hill sloping down in a southerly direction to the bed of the creek. I saw the mouth of the tunnel, and the bed of the creek below from a point above, and it is very difficult to judge of the altitude of the point where the tunnel came out above the bed of the creek.

2. How far above the tunnel were you? A. I was probably about 300 feet.

2. Above the mouth of the tunnel? A. Yes.

2. Why did you not go down to the mouth of the tunnel? A. Because my business did not call me there at the time, and I was pressed for time examining other matters. I had no idea of ever being



called upon to state about that

Q. Could you easily walk up and down the grade, the 300 feet? A. Well it was a little mountain trail. It is quite easy of ascent and descent to persons used to walking on mountain trails

Q. How steep was the mountain there down where you saw it?

A. From where I stood to the tunnel, it was about 30 or 40 degrees below the horizon

Q. Did you notice whether or not this descent went directly down to the bed of the creek or did it go down to tableland by the side of the creek?

A. It went directly to the bed of the creek

Q. Can you take a piece of paper and make it in the shape of the creek there, and the mountains on either side?

A. Cross-section?

Q. Just make the shape of it.



about as it runs to the creek if there is any such a thing, if it is level or straight down to the bottom? A. Well this would represent the elevation {representing with a piece of paper} This hollow in the paper would represent the elevation, this piece of paper sloping up to the right, as I view it would represent the side of the hill or ridge that had been mined off above the edge of the paper here

2. It had been mined off above the edge and the tunnels, the shorter tunnels, came through the rim of this bank that had been left standing, which bank, the east bank or the south-east bank?

A. The south-east bank of the washings; the northwest bank of the creek

Mr Rhodes The right bank of the ravine is it not?

A. The right bank of the ravine.

Mr Hart Did you notice



anything below, immediately below, the dump of the Gold Run Mine? A. As I understand I did not see what might be considered the dump proper, but below the mouth of the tunnel I did not notice any considerable amount of debris, or gravel, or sand. It was large boulders or cobble stones.

Q. What you saw there then?  
A. Yes

Q. How far is that from the mouth of the creek, where it goes into the river. I know only by the inspection of a map that it is between half and three-quarters of a mile.

### Cross Examination

Mr Hammond Hall,

Mr. W. C. Belcher, This survey, Mr Hall, in which you give sixty-five feet as the depth was simply from what somebody had told you, in a



general estimate, I suppose, and is not based upon any reliable data at all?

A. I did not hear your question.  
 Q. You gave 65 feet as the depth of the early washings? A. Yes.

Q. Upon what do you base that?

A. I base that upon the appearance of the edge or edges of the excavations, the banks, the heights of the banks that were left standing; the heights of portions of the hill that were left standing, scattered through the area of the washings, and the general information which I obtained from those who were familiar with the former topography.

Q. That was simply an estimate; how would an estimate of even 10 feet greater than that be out of the way in your judgment?

A. I think that an estimate of 10 feet greater would be a little in excess.



Q. But yet you do not know whether it would be?

A. I would not be able to say that it would.

Mr Hart. I will let Mr Hall state what the amount of debris appears to be from an estimate made upon an actual survey afterwards made by Mr Grunsky.

Mr W. C. Belcher Would not Mr Grunsky be the best witness.

Mr Hart Mr Grunsky is a member of his department, and the survey was made under his directions.

The Court If it is objected to you will have to prove it by Mr Grunsky.

Mr Belcher insisted on his objection, and the question was withdrawn.

Recess until 2 o'clock P. M.



In the Superior Court  
of the State of California  
in and for the County of  
Sacramento

The People of the State of California vs. The Goos Run Ditch and Mining Company	}	Afternoon Session Thursday Decr. 1 <sup>st</sup> 1881
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Winfield J. Davis  
Official Reporter



Afternoon Session  
Thursday Dec 1<sup>st</sup>/81

Testimony  
of  
W. F. Hall

resumed

Mr. Hart. Are you acquainted with this map [referring]?

A. - I am

Q - What is that?

A. That is a map of the American River and the bottom lands adjacent to it, from about the mouth of Alder Creek down to the Sacramento river and including the vicinity of Sacramento.

Q And portions of the Sacramento River also? A Yes sir

Q Where was that made?

A. That map was made in the office of the State Engineer.

Q As the result of what - how was it made?

A. As the result of surveys

8064



Conducted under my direction as State Engineer. These surveys were joint surveys with Col. Mendell of the U. S. Engineer Department, but I directed the work.

2. By whom was this map made? A. The surveys from which the map was made were actually conducted by Mr. Manson, Mr. Grunsky, Mr. Fitzhugh, Mr. Vescher, and one or two other assistant engineers whose names I do not remember. The actual plotting of the map was made by Mr. Vescher, Mr. Grunsky and Mr. King under my direction.

2. Is that a correct map of the river and the locality through which it runs so far as it purports to represent it?

A. I believe it to be a very correct map - I know it to be a very correct map.

Map offered in Evidence without objection and marked Hall Exhibit No. 2.



# Testimony of J. L. Gould recalled

Mr. Hart. In the complaint there are two tracts of land described as constituting each a claim belonging to the defendant in this case. Which one of those did you describe when you were on the stand before?

A. The lowest one near Cañon Creek.

Q. Near the mouth you mean of Cañon Creek?

A. The most southerly.

Q. Where is the other located?

A. It is north of that, up the Cañon.

Q. How far?

A. It is about two thousand feet.

Q. Does it adjoin it?

A. No sir.

Q. About two thousand feet from it?

A. I think so.

Q. What is there between those two claims?



A. There is the Gold Run Hydraulic Limited

Q. That is between those two Claims?

A. Yes sir

Q. What is the Extent of the Northern Claims?

A. I think it is about fifty acres, I am not positive

Q. I know ask you what was its length up and down the ridge - What is the length of the Northern Claim?

A. I think it is about Fourteen hundred feet

Q. Fourteen hundred feet in length?

A. I should think so

Q. Is there any other Claim beside that belonging to the defendant?

A. Yes sir

Q. What one is that?

A. There is one called the Gold Run Claim

Q. Where is that?

A. It joins the North Star

Q. What is the length of that?

A. They own one half of that, it is about Eight hundred feet.

Q. In length?

A. In length



Q. Is there any other claim there belonging to the defendant?

A. Yes sir, there is the Church and Golden Gate claim.

Q. Where is that located?

A. Above Gold Run, north of Gold Run.

Q. How long is that?

A. I think that is about one thousand feet.

Q. A thousand feet north. Is there any other claim there that belongs to the defendant?

A. Yes sir. There is what is called the Taylor claim.

Q. And where is that located?

A. North of the Church and Golden Gate.

Q. How long is that?

A. That is seventeen hundred feet, thereabouts.

Q. Now, is there any other?

A. Yes sir, there is a claim called the Hankness claim.

Q. Where is that located?

A. It is north of the Taylor claim.

Q. And what is the length of



that? A. I am not positive the length of it. It must be fifteen hundred feet I should think.

Q. It must be fifteen hundred feet at least?

A. Yes sir.

Q. Could not you say it is any longer than that?

A. No, I am not positive.

Q. You are not positive it is any longer than that?

A. No sir.

Q. Now is there any other?

A. There is a small claim between these two claims between these called the Benton claim that is about two hundred and fifty feet.

Q. Any other?

A. That is all.

Q. Now, where are these claims with reference to the Gold Run hill or ridge?

A. Indiana Hill, do you mean?

Q. To the Gold Run ridge — a ridge there — the main ridge is called Gold Run ridge



is it not? A. They form a part of that ridge, extending up that ridge from Indiana Hill to the Rail Road

Q. What is there between the Railroad and Indiana ridge excepting these several claims belonging to the Gold Run Ditch and Mining Co., the defendant

A. There is a claim called the Blue Travel and Farland Ravine Claim and Bay State No. 1 and the Denton Claim

Q. These four claims in addition? A. Yes sir

Q. They are all however on this Gold Run ridge? A. Yes sir

Q. On the slope towards the American River? A. Yes sir toward Cañon Creek.

The Court. These are all separate claims? A. Yes sir

Q. Commencing with the one furthest south; what is its name? A. The Indiana Hill Claim

Q. And the next? A. North Star

Q. And the next? A. The next is the Gold Run



Q. That is the next in order going north? A. Yes sir.

Q. Next to the Gold Run?

A. The Church and Golden Gate

Q. And the next?

A. The next is the Taylor claim.

There are several claims all put in one called the Taylor claim.

Q. Is that all? A. The next is the Benton claim.

Q. These all belonged to this Company? A. Yes sir, all excepting one half of the Gold Run. The next is the Harkness claim and that is all.

Mr. Hart. How about the Excelsior? A. That does not belong to it.

Q. Is that a large or a small claim? A. That is a small claim.

Q. How long? A. I think it is about six hundred feet long.

Q. How long is the Gold Run, that is running up the ridge



A. I do not know the exact distance, but I think about eight hundred feet.

Crop - Examination  
J. L. Gould

Mr. Byrnes. Are there not several other claims in the Gold Hill district and upon that ridge which has been described that do not belong to the Gold Run Ditch and Mining Company? A. Yes sir, but they are outside claims not on the channel. There are claims outside of that, that have been washed off.

2. The surface of which has been washed off? A. Yes sir.

2. Will you name them and give their area as near as you can. You mentioned the Excelsior as being one that your Company does not own  
A. Yes sir.

2. You do not own the Ex-



- Elseri Claim? A. No.

Q. The others do you not own?

A. There is the Bay State No.

1

Q. How long is that?

A. I should think it was a thousand feet

Q. What is the next one?

A. The Blue Travel

Q. State the length of it?

A. I do not know the length of it, but I think it to be eight or ten hundred feet

Q. Say, a thousand feet. Give us the next?

A. There is the Prindall Claim.

Q. State the size of that?

A. Well sir I could only approximate; it perhaps is a thousand feet

Q. Give us the next?

A. Then there is the Bay State No. 2. The Company own that. It is a side Claim and not on the Channel and that is why I did not mention it before. The Surface has been washed off



Q. To what depth?

A. I should think seventy five feet or so

Q. What is the size of the Bay State No 2?

A. I should judge there was twenty acres in it

Q. Give the names of any claims in that district that you remember?

A. There is the Pacific

Q. What is the extent of that?

A. I should judge it was twelve or thirteen hundred feet in length

Q. Any others?

A. And the Union ground, the Union claim it is called

Q. What is the size of that?

A. About six hundred feet I think

(Objected to as not  
Cross-examination)



Q. Let me ask you if there is not a claim there, or two claims now consolidated under one ownership known as the Sherman and <sup>Edgar</sup> Father?

Mr. Hart Belonging to this Company?

Mr. Byrne. No. Lyung between the Indiana Hill claim of this Company and the Church and Golden Gate

Mr. Hart.. We object to that question as not in cross-examination

Objection sustained

Testimony  
of  
C. E. Grunsky

Called for plaintiff

Sworn,

Mr. Hart Where do you live?

A. My home at present is in Sacramento

Q. How long have you lived here

A. It has been my home for the last three years, although for



The most of that time I have been stationed at different parts through the valleys in the State

Q. What is your occupation?

A. I am a Civil Engineer

Q. Where were you Educated?

A. I was educated in part in Stockton, San Joaquin County and in part in Stuttgart Germany

Q. How long have you been pursuing the occupation of Civil Engineer?

A. Practically

Since December 1877

Q. What is your occupation at this time?

A. I am

Assistant State Engineer

Q. How long have you been acting in that capacity?

A. Since June 1878

Q. Did you ever have occasion to Examine the Gold Run mine?

A. Yes.

Q. When?

A. I visited the Gold Run mine on November 4<sup>th</sup> and 5<sup>th</sup> this year, was there in that locality

Q. While you were there did you meet Mr. Gould the Superintendent?



of the Gold Run Ditch and Mining Company? A. I did

Q. Did he point out to you the mine and the claims of that Company?

A. He pointed out one claim for which I made inquiry known as the Indiana Hill Claim, and showed me in that claim the ground which had been washed by the Company.

Q. In what year was this November 4<sup>th</sup> and 5<sup>th</sup> that you speak of?

A. This year, 1881

Q. What was your object in visiting that claim?

A. It was to make an estimate of the quantity of material which had been washed there by this Company against which the suit is brought.

Q. How long did you continue your examination?

A. In the mining pits only on November 4<sup>th</sup> and 5<sup>th</sup>

Q. Who was with you at that time?

A. General Cosby from Sacramento accompanied me there. In the mine were



present on the first day Mr. Jones and two assistants helping me in making the surveys necessary for the estimate. On November 5<sup>th</sup>, G. F. Allhardt and Huntley of Oakland were also present. 2 And Pearson also?

A. and Pearson also on Nov. 5<sup>th</sup>

2. From your examination of the mine and that locality give a description of the mine, of the ridge on which it is located the stream known as Canon Creek and the place where it empties into the North Fork of the American River?

A. The Gold Run Mining District lies on a ridge just between the Bear and American rivers, or more properly speaking, the North Fork of the American river. On the slope toward the South or South East lies the ridge of gravel deposits which have been mined in the Gold Run district. At the base of ridge flows Canon Creek which, after



an easterly and the southerly direction empties into the North Fork of the American River.

Q. About how high is the ridge and what are the appearances that you found there with reference to its having been worked?

A. The ridge had to a great extent been mined. Large excavations were possible in the gravel. Vertical banks were left standing, bluffs through which the work had been conducted, so that apparently the center or body of the ridge had been taken out; and that material was gone while evidences of a gravel deposit were left on the sides.

Q. To what extent had that work been done?

A. Apparently, as near as I could judge, by simply viewing the entire succession of pits, or excavations there, it covered a space of perhaps



two or more miles in length, and a half mile in width, taking that approximately.

Q. What are the character of the sides of the mountain descending toward Cañon Creek?

A. Of those mountains which have not been mined, do you mean?

Q. No. I mean the ridge on both sides; the ridge in which this mining has been done.

A. Cañon Creek below where the mining has been done has very steep sides, so that I was not able to judge and can hardly form an opinion. The sides appeared to be steep wherever I saw them bordering those creeks.

Q. How did the sides of that ridge run down? where did they run to?

A. The ridge or one side of the ridge sloped off to - was Cañon Creek, but it was cut in various places by smaller Cañons of various names



the Evidences of which still were there. Water streams were trickling down through those old Excavations or pits, and my Examination, or my inspection there was confined for the most part to the Excavations themselves.

Q. But generally, I want to ascertain, whether the Sides of the Hill ran down into Cañon Creek, and formed the base of that Creek, or whether the Banks run up and then there is table land; in other words whether the base of the mountain was in the Creek, or whether the base of the mountain was remote from the Creek?

A. The Slope down toward the Creek was broken to some extent.

Q. When did the base of the mountain come to?

A. I should say, it was right in the Creek, but that the Slope was not an unbroken



Slope.

Q. About what was the slope? What was the degree of incline there, or fall?

A. I am not able to make any estimate of that.

Q. You could tell whether it was  $1^{\circ}$  or  $10^{\circ}$ ?

A. Certainly, it was a steep slope.

Q. Could a horse go up it?

A. In places, yes; in places, no. It varied at every locality of course.

Q. About what depth was the Cañon, at the place where this mining had been done on the ridge?

A. I do not quite understand that question. You will have to specify the location a little more closely.

Q. Well, give the general depth along this ridge up Cañon Creek as far as you went?

A. What I saw of Cañon Creek, happened to be only on the way into the mine



So I know very little of Cañon Creek

Q. Well, at the place where you saw it?

A. There the slopes were steep and abrupt. The bottom of the Cañon was rocky, formed of bed-rock.

Q. And about how deep from the top of the ridge?

A. There was no ridge there or at least it was mined off.

Q. Well, where the ridge has been. You could see and make an estimate of that Cañon from the ruins?

A. I am afraid that I do not comprehend the question that is being asked. I do not understand what you are trying to get at.

Q. There is Cañon Creek down there; here is the top of this ridge. How far is it from here, down there, from the top of the ridge as you saw it?

A. It is simply a run left



Canyon Creek

1000 ft per mile



Standing there, probably three hundred or four hundred feet from the bed of the Creek. It slopes right opposite

2. But I mean right opposite commencing at the top of the ridge and running right down opposite to the point below 2.

A. I should say it was several hundred feet from the top of the ridge down to the bottom of the creek

2. Did you go up and down Cañon Creek any?

A. No.

2. Did you notice the fall of Cañon Creek at any particular point? A. No, no farther than, that there was great fall there

2. What would you say was the fall per mile there?

A. I have not even made an estimate in my mind as to the figures that would be given. Perhaps it is in localities one thousand feet per mile if it extended that far; in other



places less.

Q. After your Examination of the Saco Run ridge did you make any Examination of the mine itself?

A. Yes I did. I made such surveys as were necessary for an estimate

Q. Now Commence with your Examination of the mine and make your Examination to the Court, stating exactly what you did and saw

A. With the results of that Examination

Q. Yes. And if you have any map, take your map and refer to that if you desire

A. I have here a rough map based on the results of the survey made here in the part of the Saco Run Ditch and Mining Company

Q. Now if you will stand up here by the Court and make your statement and tell the Court as you go along on the map, perhaps the Judge will understand you better. We



Contents - file



will mark this Exhibit No 1  
Grunsky.

A. The Excavations of the Gold  
Run Ditch and Mining Company con-  
sist of one main pit which I  
have numbered "Pit No. 1". Around  
the outside of this pit adjoining  
it are four smaller Excavations,  
which I have numbered "Pits  
No 2. 3. 4 and 5". Number 2  
lies south east of the main  
pit, Number 3 and Number 4  
East, and Number 5 north or  
slightly north East of the main  
pit. The entire surface covered  
by the Excavations has the  
appearance of having been  
runned off down to a certain  
level or a bench, and main  
pit Number 1 is situated  
in this bench and has a depth  
of from forty to one hundred  
and twenty feet down to the  
bench level and present dump  
which in some places is bed-  
rock. The contents of pit  
Number 1 as based on my  
Estimate, are 3.925.790 cubic



yards. This pit is all deep washing. The general length of the main pit is about 1200 feet, its width 1150.

These figures are given only approximately. The contents of the second pit of which I was speaking - of No. 2. - are 214,520 Cubic yards; of pit No. 3, 57,260 cubic yards; of pit No. 4, 26,000 Cubic yards; of pit No. 5, 314,610 Cubic yards. The last four pits are all surface washings. The total washed by the Company is 4,582,280 Cubic yards. These estimates however are only approximate as I had to store in my own mind the surface of the ground as it existed before the mining by the Company commenced, or as it had been left after the surface washing had all been completed up to the time of the workings of this Company. The outline of the pits was designated by Jones, who was



present at the time the survey was made. In the bottom of the different pits were cuts or ground sluices, through which the material was washed along the different banks, was conveyed towards a tunnel, the mouth of which lies in about the center of pit No. 1. Through this tunnel all the washings of the Company were discharged, passing out into Cañon Creek, and thence into the American River.

Q. How large was that tunnel?  
A. I made no examination of that.

Q. Now, can you describe before you come to the next branch of your testimony, the general appearance of this pit, its location with reference to Cañon Creek, <sup>the branch of Cañon Creek,</sup> and the bank <sup>near</sup> ~~where~~ the tunnel through which this debris is discharged into Cañon Creek, and then the general distance from there to the American River



Material of mine



and the Character of the Creek  
from there on

A. In looking into the Excavations made by the Company, a person will first observe the difference in color. Near the surface the soil is red down for some distance. Lower down the bank nearer the bed-rock in which the gravel deposits are made the color is blue or has a more slaty appearance. The material there is a mixture of a hard and softer rocks, generally cemented. Near the surface is less cement. The material in the claim is of a softer probably lighter nature. The locality of the mouth of the tunnel I did not examine, nor Cañon Creek from the mouth of the tunnel down to the American River.

2. Now what I want to get at is this: Were there any ruins to this pit that you speak of and if so what is the charac-



ter of these runs

A. The deep mining pit, the one whose contents I estimated as main pit number 1 had a bottom extending up to the level of the bench to which the original surface mining had been conducted. Above this was a second run at some distance back from the first which had an elevation of about four hundred feet above the center, or the bottom, the extreme bottom of the pit.

Q. Was there any place by which that pit could discharge its tailings or debris except the place you mentioned where the tunnel was?

A. None that I observed

Q. What did you see there

A. Not the deepest portion of the main pit. Those smaller surface pits may have discharged some of their material through other outlets beside the tunnel.

Q. Where did this run go?



I did not understand that very well. Which way did it go? How did it surround the pit, and where did it leave these openings?

A. There was the deepest portion in the main pit which was lower any portion of this run; consequently material washed down on that surface comes from nowhere if carried by water - which will only flow down hill - except down towards the tunnel, for it comes not get out above the top of it.

Q. You say you did not examine at the Channel or Cañon Creek below the tunnel?

A. No.

Q. Did you see the mouth of Cañon Creek?

A. Yes.

Q. Now describe what you saw there?

A. At the mouth of Cañon Creek.

Q. Yes.

A. The river is flowing in a narrow channel having rocky sides, and a rocky bottom.



River



in which large cobbles or small boulders up to the dimensions of perhaps one foot or one and a half feet, sometimes even greater than that, are scattered. With these is mixed finer material but only in moderate quantities. The character of the river bed immediately above and immediately below the mouth of Cañon Creek appears to be the same. There is no deposit, at least not noticeable at the immediate mouth of Cañon Creek, or was not at the time of the Examination.

Q In the river or in Cañon Creek?

A. In the river

Q. Was there any deposit in Cañon Creek at that place?

A. None that I noticed.

Q. Did you notice the character of the bed of the Creek there?

A. Yes. Its descent was almost vertical over bed-rock.

Q. Now what further Examination did you make? Pro-



ceed with your Examination from there and state it in your own language

Q. My exploration continued from Cañon Creek down the bed of the channel

2. Of the American river?

A. Of the North Fork of the American River - on horse back. We found in the first section of the river, which I will call from Cañon Creek to Iron Hill trail

Mr. W. C. Belcher. What book are you reading from.

A. I was not reading but simply referring to a note

2. What is your book?

A. It is simply a book of notes which I have taken of my Examinations there

2. When did you write it?

A. The notes were written at the time of the Examination and immediately after my return to Sacramento

2. That's the original book is it?

A. Yes



Supersito

Canyon Creek - Loma Hill Land



Q Which you wrote at the time?

A. At that time

Mr. Hunt. Now go on. Give the distances if you can as you go along.

A. The length of the first section is two miles. We found in the first section of the river which I will call from Cañon Creek to Iowa Hill trail, deposits which extend from side to side of the river channel, water washed bed rock appearing at places above the level of the deposits throughout the whole section, the river, or, rather its bed having apparently a uniform slope, the deposits consisting of cobbles, gravel, and small quantities of sand, as would be expected to be found below bends in the river, or below large projecting rocks; in some places bars of large cobbles which apparently had been placed there by the river before any mining commenced



Long Hill to Lanes Bridge

up 100



and which to some extent were a guide in Estimating depths of deposits. The length of this section of the river is about two miles. I have made a rough Estimate of the amount of material which is lodged in this section of the river and have arrived at it in this way: Water washed rock, where there were no deposits or apparently none, appear at a considerable distance above the water surface, sometimes twenty or more feet for the entire distance. Reasoning from them I Estimated the gross maximum filling to be found in each Cross section of the river at about fifteen feet and the total deposit Estimating the Cross-sectional dimension as a parabola, or taking  $\frac{2}{3}$  times the surface width, times the greatest depth, gives the greatest deposit of 786,000 Cubic yards. In section number 2 from —  
 Iowa Hill trail to Stevens bridge



Stevens Bridge to River Bridge



— The filling is more uniform than in the preceding one. At the lower end of the section near the bridge there are well water worn rocks ten feet above the present water surface, and the material at the bottom all lies on apparently a uniform grade and ~~forms~~ consists of gravel and cobbles, cobbles mostly, up to four inches in diameter but always mixed with smaller material. The deposit estimated on the same basis as before stated, is, in this section 1,266,000 cubic yards, average gross depth again taken, ten feet.

2. What was the full amount then? A. 1,266,000 cubic yards.

2. What was the length of that section? A. About 3.7 miles.

From Stevens Bridge to Rice's bridge a distance of 1.8 miles, the deposits decrease, the river cañon becomes narrower and bed rock crops out in the river bed in various places. Deposits are graded. Water



flows steadily, not in pools and ripples. In this section of the river the average height of water washed rocks above the bed of the river or the general level of the bars, the gravel and the light deposit there is eight feet. The average maximum fill for the entire length I assume at 12 feet; the average width at 155; the total deposit in that section at 436,000 cubic yards.

2. Before you proceed to give the next section, I want to ask you a question. What was your method of judging the depth of the deposits?

A. In estimating the depth of the deposits I was governed entirely by the appearance of the river canyon. In some localities it was evident that there was very little deposit or none at all, but then the water washed or well worn rocks gave me an idea of what would be the condition



Ricky Canyon No. 1



of the Cañon at other points having about the same width, and from this I formed an Estimate of the Probable filling throughout and entire reach having about the same general Character, well knowing that in some localities the depth of deposit might exceed my Estimate for the whole reach three fold or four fold.

2. How did you estimate the length and breadth of deposit.

A. I estimated the ~~one~~ by the time taken in travelling from point to point, and from a map which I afterward used here in Sacramento. The other the breadth I estimated by noting every few moments while travelling along the Cañon the width as estimated by eye, and averaging those widths for the entire section.

2. Now proceed with the next Section.

A. Below Rice's Bridge the river flows through a steep



rocky Cañon. I say steep  
 because its grade is surer than  
 the Cañon above. I had not  
 way of estimating the fall  
 of the water per mile but it  
 is considerable, and is much  
 more than it is in the reach  
 of the section above. This  
 Cañon proper begins about 500  
 feet below Rice's bridge which is  
 on the road from Colfax to  
 Iowa Hill. In this rocky Cañon  
 the river flows over bed rock  
 and between large boulders stand-  
 ing there, sometimes in ripples  
 or small falls, again in pools  
 between the rocks or projections  
 of rocks. From the bridge to  
 the lower end of this Cañon  
 the distance is about 2.5 miles.  
 The average width of the river  
 there is about sixty feet where  
~~considerable~~ and deposits in  
 consequence of mining are so  
 slight as not to have been  
 estimated, consisting only  
 of sand or light material  
 as may have been lodged



Ruby Canyon to Ship's Cove



by water comparatively at rest in small pools or behind rock.

Q That is the third section?

A Yes.

Q Proceed.

A. Section number four from the lower end of this Cañon to Shirt-tail Cañon has at its upper end no filling. The filling gradually increases and near the lower end of the section there are many points where soil covered rocks and trees appear at the very edge of the gravel bars.

Q That is number 5 is it not?

A. I think the last was number 4, it is number 5.

Mr. W. C. Belcher. I desire to ask this: That, if the witness reads, as I think he does, from his note-book, it be written out and presented to us instead of his reading it here.

Mr. Hart. He is not reading Mr. W. C. Belcher. Do you state that as a fact?



Mr. Hart. Yes, as a fact  
 Mr. W. C. Belcher. What does the  
 witness say to that

A. I have to confess that  
 I have read one or two sentences  
 as written. In other cases  
 I have simply testified, being  
 guided by the words as written  
 here

The Court. He has a right to  
 consult his note-book

Mr. Hart. Now proceed

A. I noticed trees embedded  
 in recent deposits, and appa-  
 rently growing through the same.  
 But the trees are dead; they  
 had probably been killed by  
 the rise in the river bed and  
 the increase in deposit in recent  
 years. The recent falling of  
 the river channel I have  
 estimated for the entire sec-  
 tion at twenty feet; the  
 average width at one hun-  
 dred and twenty five feet;  
 the total amount of mate-  
 rial there deposited at  
 808,000 Cubic yards. —



Shut- Sail to Rocky No 2.



The Court. What is the length of that section? what is its Extent up and down the river.

A. Two miles. Section No. 6 is from Short tail Cañon to Rocky Cañon No. 2 distance 9.5 miles; recent filling and decreases. Toward the lower end of this section of the river the material is also so graded that the river flows steadily, not in rapids or falls and pools.

The bars near the lower end of this section have frequently created washed rocks, six to eight feet above them. The maximum average depth of the deposit in this section was taken at Seventeen feet. The estimated average width is 225 feet; total deposit 4,737,000 Cubic yards.

Q. What was the length of that section? A. 9.5 miles

Q. Speaking of the deposit there on which you made the estimate of 17 feet average



over that the whole length?

A. 9.5 miles. At this point begins a second cañon. I have called it Rocky Cañon No. 2. The River Cañon is narrow; its width averaging at the low water surface about 75 feet. The deposits between Middle Fork sides of the Cañon are bed rock. The bed-rock forms gorges at different places in the river narrowing it in, and again widening out forming pools. In some places the sides approach to within less than forty feet. The filling in this rocky Cañon is probably nowhere greater than might be expected if there were no mining. The average width at the low water surface is about 75 feet. Deposits none. What little there is, there is pools below rocks is of the nature of quick sand, ~~the same~~ <sup>or some</sup> material moved by water after the high water have passed over these rocks and dropped as soon as the



Rocky No 2 - Middle Fork



Current has slackened and is  
very small in quantity. Section  
No. 8 is from the lower end  
of Rocky Cañon to the lowest  
end of the American River



Mr Codwallader What was the length of that last section? A. 1.4 miles Section number Eight is from the lower end of this Rocky Canyon to the Middle fork of the American River: distance 1.8 miles from the Canyon just described to the middle fork of the American River, which is 1.8 miles below it, the River bed is wider. The deposits are not extensive except near the Junction of the two forks where considerable material has recently been deposited by the water. A sand and gravel bar above the junction in North fork, on its right bank, has a height of perhaps 15 feet above the low water surface, its top and lower end is sand, its upper end gravel. It is such a depositor as is likely to form every year, to be swept out by the next high water and replaced as soon as the



3143

middle - Sam



Current slackens or as soon as middle fork remains at a high stage

Mr H E Belcher I would like to interpose an objection here. The witness states not only facts but a good deal more. I will prefer that he state facts and leave conclusions over, for the present at any rate. And we would move to strike out the last part of his last answer. The Court Omit those probabilities, what will probably happen. Mr Hart Well let it go for the time being leave that part out.

Witness, Estimates made for this section of the River give a total deposit of 44000 Cubic yards. From middle fork to a dam placed across North Fork at a point about three and a half miles below the junction of the middle and North Forks, the River flows between bed rock sides

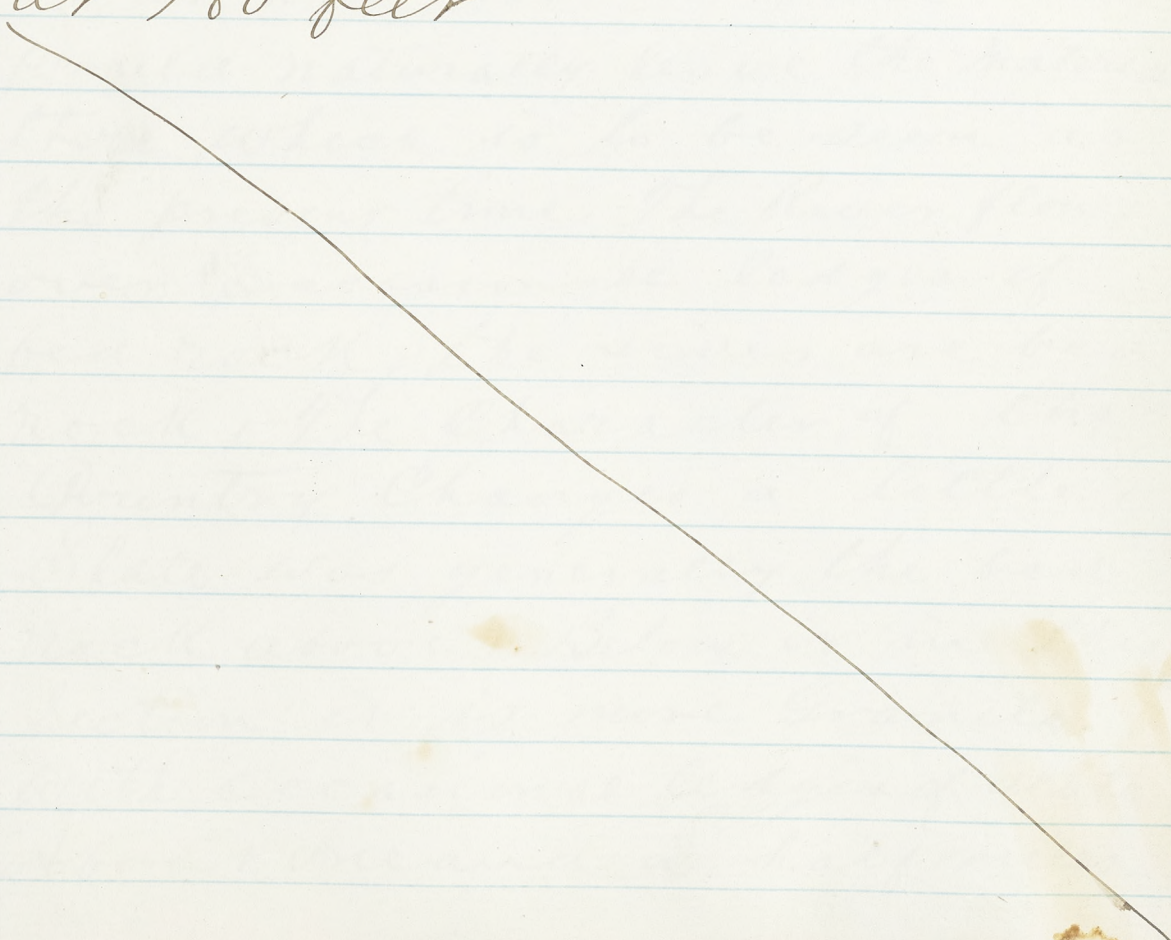


Occasionally over a bed rock bed; the tops of large boulders are occasionally visible. And some material is found deposited in the different reaches of the River, but the depth of the deposit in the entire section will not average at a very large figure. A short distance above the North fork Co. dam are the remains of an old dam behind which there is still some material that has been left there after the dam was destroyed, which occurred during the high waters of last winter. This material had the appearance, from some distance — I was not right at the point — of being cleaned gravel of various fineness. The North fork dam is an obstruction placed across the bed of the River for the purpose of diverting water. It has its greatest height in the centre



of probably 30 feet. Its width is about 280 feet; that is, the width of the River at the Crest of the dam is about 280 feet, the deposits between Middle fork and in the new North fork dam were estimated at 469000 Cubic yards.

In this Estimate the deposit is supposed to extend two miles up stream above the Old dam with an average greatest depth of ten feet, the average present bed width having been estimated at 180 feet





North Fork Dam - Rutte Spruce



Mr Cardwallader Is that above or below the dam?

A That is in that section of River which lies between the dam and the middle fork mouth —

The next section of the River section ten from North Fork dam to Rattle snake bar a distance of seven miles, In this section of the River there is probably very little more filling than might be expected than if the supply of material from above were not as great as at the present time. Water would naturally leave the material there which is to be seen at the present time. The River flows over occasional ledges of bed rock, the sides are bed rock. The Character of the Country Changes a little, Slate was generally the bed rock above. Below or in this section it is more Granite with occasional ledges of slate About one and a half miles



below north Fork dam between water worn boulders forming a part of the bed rock, is a deposit of gravel mostly fine gravel into which an excavation for mining purposes has been made. The excavation had the appearance of being about 15 or 20 feet deep, showing that even between those boulders the deposits was frequently of considerable depth but their total width is not very great.

About half a mile below the point just described the River flows through a bed rock Canyon, the bed rock being Granite its width is narrowed in to 40 or 50 feet. No deposit in this Canyon is possible. River retains practically the same character to a place which I have called Kellers Orchard and has bars appearing in a few localities where the river has greater width than in the Gorge which occur here and there. At



Kelley's Orchard I noticed deposits of fine clean sand very high up the bank probably 30 or 40 feet which had been left there by some of the more recent high waters. The sand was found deposited behind large projecting rocks on the side of the stream and were undoubtedly left there by — =

Objected to as being "Conclusions and not facts." The Court State where it was you found sand ?

A. The sand was lodged behind large rocks that projected out from the hillside slope. Its total quantity is small. Mr Hart How did it appear to have been deposited there if it had any evidences of that in itself. =

Mr Belcher makes the same objection = The Court If he can tell whether it had been freshly left there or an old deposit



He can state } A. It appeared to have been left there by the last water of the River which had reached an elevation sufficient to overtop these rocks behind which it was left.

Mr Start How was it as to being clean or dirty, filled with dirt or mud and sediment } A. It was clean sand Q. You say at 40 feet above the level of the water }

A Probably about that height =

In the River at Kelleys Orchard ~~as near as~~ there was also a Cobble bar having a slight elevation above the water surface, I am not able to make an estimate as to how many feet, in which the Cobbles are large, from four to six inches, and being a bar of apparently recent deposit. From Kelleys Orchard to Rattle Snake bar the River width is quite variable, the bars of large Cobbles, in the wider



Rattlesnake to Luten's

1



Reaches alternating with gulches  
 Cut into bed rock where the  
 River flows over bed rock ledges  
 and large boulders. Some of the  
 hills, <sup>adjoining the river</sup> Canyon are gravel deposits  
 in many instances there has  
 been some mining conducted  
 in those deposits. I have  
 made an estimate as very  
 roughly approximating to the  
 quantity of material lodged in  
 this section at one million  
 Cubic yards }

Q What was the distance of  
 that section }

A. Seven miles from the  
 North fork dam to Rattle  
 Snake bar, Section ten =

From Rattle Snake  
 bar to Dotens bar the dist-  
 ance is four and a half miles  
 River in this section has  
 the same general character  
 as above. The gravel deposits  
 on each side appear to be  
 more extensive. Many of them.  
 Considerable mining, and the  
 deposits in some cases extensive,



Sutton to Carlton

Carlton - South Fork



although of probably not a very great depth. There are many large boulders from one foot to 18 inches in diameter, which lie from side to side across the river bed at different points where the width of the stream is considerable. Total deposit for this section, I will give at one million cubic yards, as a very rough approximation.

§ From Dotons' Bar to Carleton, section No 12; length 2 miles. The character of the river remains the same. Water washed rocks in this and preceding sections, were observed at considerable elevations, above the water surface. Deposit for this section has been estimated at zero-nothing.

From Carleton to junction of north and south forks is Section 13

Mr Cadwalader zero, that is nothing? A. Yes. The length



Smith F — Falsom

Falsom to Sacto



2 of section 137 is 3 miles. In saying no deposit I mean recent deposit, or such deposit as might not be there in case there were a limited supply of material from above.

In section, 13, The river is for the most part in a bed rock cañon; flows on a bed rock bed; and has a fall sufficient to keep the cañons clean or practically so.

Section 14 is from the junction of the north and south forks to Folsom. It is the combined American River. Through this distance the river is also in a granite cañon flowing over riffles with slight falls. Water in some localities standing in pools, and deposits are very small.

I have also seen portions of the river from Folsom to Sacramento. The river widens near Folsom. It flows on a bed



which consists of cobbles, and finer material, varying according to position in the cross section of the stream. Generally a bluff bank upon each side of the river flanks the land subject to annual overflow. Between these bluff banks the river meanders. Between these banks lie the bottom lands of the river. The old channel of the river is not always traceable to one who has not been originally familiar with the country. Some of the bends of the river are crossed by the main portion of the river, at its high stages, in consequence whereof it has washed off portions of the lighter material. Channels cut into the same being at present covered with cobbles gravel, and sand, and finer material generally, at the lower end of each such cut off or shortening of



The river, and coarser material near the upper end

Q. Where is that, at Folsom, or between Folsom and here?

A. Between Folsom and here

Q. About how much did you notice that the bed of the river was filled in as you came down?

A. From Folsom to here?

Q. Yes. A. I was not able to make any estimate.

Q. How near to the tops of the banks? A. The banks could not be distinguished, the original banks.

Q. What was the nature of the material in the river, in the banks. That is, what was the nature of the material over which the water flows in high water?

A. Within 4 miles of Folsom, the bed of the river is composed of cobbles principally, smaller material filling up the interstices between the cobbles - The bed proper of



The river channel

Q. And further down?

A. And further down I am not so familiar with the general character of the river excepting at its mouth where the material in the river is sand - sand and finer material in spots

Q. Did you come down the river all the way from Tolson? A. No, sir. I followed the river as far as possible, as far as Alder Creek, and even then not throughout the entire meanderings of the river, but I saw it again at several points below Alder Creek

Q. And at those points where you saw it below, what did you find to be the nature of the filling, the deposits?

A. The deposits were generally sand and gravel

Q. When you were in the mine, or in the pit of the mine, pointed out to you



by Mr Gould, did you examine to see what was the character of the material in the mine itself, and on the sides of the pit?

A. No further than I observed by a simple inspection.

Q. What did you observe it to be? A. Near the surface there appeared to be a red gravel soil. To what depth that extended I cannot say - probably 20 to 40 feet. Below it was material of a blue shade, of a blue color, which in some cases was quite firmly cemented. It consisted of rocks of various kinds, and various hardness.

Q. What kind of material was this blue -

A. {Intg} I was speaking of it. It consisted of rocks of various degrees of hardness, which were embedded in a cementing material.



sand and gravel, all the different grains of which appeared to be bound together by some substance, having the properties of cement.

Q. Do you know what that substance, having the properties of cement was?

A. No sir. I have no knowledge of what it is in that case.

Q. Did you take any of the boulders or rocks in your hand?

A. Yes some of them.

Q. What was their adhesive quality, their strength? Could you tell?

A. Some of them were very hard and firm, quartz occurred; while others were of a softer nature.

Q. How soft?

A. They would break when struck with a hammer, or if several of the stones were knocked together, or even stepped upon some had the feeling of soap stone and would crush under the heel.

Q. Forming what?



A. They would form a soft powder, feeling moist

2. You have now mentioned the amount of the material in each mile, in each section. What was the character of that material generally. Describe it?

A. The character of the material the quantity of which I have attempted to estimate, was from sand to rocks of the dimensions of four to six inches in diameter

Mr Cadwalader. When you speak of rocks, do you mean cobbles, cobble rocks? A. Cobble stones

Mr Hart Which one of those materials existed in these deposits in the greatest proportion, in these deposits in the mountains?

A. Gravel or rocks which have a size ranging from perhaps a quarter of an inch to two inches in diameter, I think would predominate



Face of river



Q. About what proportion was sand? A. I would think that there would be sand enough to fill up the interstices between these rocks. Just what proportion that would be I am unable to estimate.

Q. At these several sections which you have described, about what was the fall per mile of the river as near as you could estimate it?

A. The fall was greatest in those places which I have referred to as rocky cañons, or as cañons in which the river flows over bed rock and bed rock ledges. It was <sup>least</sup> ~~least~~ where the material was graded, where at moderate or high stages the river flows along steadily, without falls. In those places, I think the fall is somewhere near forty feet



per mile

Q. Forty feet? A. Yes.

Q. In which places is that?

A. Where the material is deposited uniformly, on about a uniform grade.

Q. And in other places what would your day would be the fall - is the fall?

A. The fall is greater than where it is so graded, but I am not able to estimate it, not having made an instrumental survey.

Q. Was there any water running in this stream at the time you were there? A. Yes.

Q. How much water about? A. There were about eighty cubic feet.

Q. About what?

A. Eighty cubic feet per second, that is simply estimated by eyes. I made no measurements, but that was.

The conclusion I arrived at



at the time I was riding along

Q. Did the water run rapidly, or with a slow and sluggish current?

A. It flowed quite rapidly. The current generally in these reaches, where it flowed on a uniform grade, was probably from 2 to 3 feet per second. In the rocky canyons it had all manner of velocities. In the pools it was very sluggish, but when it flowed over a ledge, or between ~~two~~<sup>two</sup> boulders, that made its channel very narrow it was much greater.

Q. About how deep is the river? A. Its general depth, when flowing steadily along, was in the canon above Middle Fork, less than two feet.

Q. Less than two feet in depth. This was at low water, of course? A. This was at the low water stage.

Q. Could you tell from



any evidences, upon the side of the mountain, or the side-hills, or the banks, how much higher before than the water had run, at how much higher mark?

A. In some localities I was able to make such estimates, in others I was not.

Q. Well sir, what was the result of your estimates in such localities as you made estimates of it?

A. In the upper portion of the river, above middle fork, where the river was not flowing in canyons over bed rock, the water washed rocks, and the shrubbery, growing on the sides of the cañon slopes, gave evidence of a rise of between twenty and thirty feet, such rises were at points where there was but little deposit. Little deposit being evidenced, again by the very large rocks in the bottom of the stream.



2. From the fall that you noticed there in the cañon, and the greater depth of the water in high water, could you estimate its velocity at times of high water?

A. It could be done, but such estimate would be only a very rough approximation.

2. Only a matter of approximation.

A. Only a matter of approximation.

2. Well, can you now approximate to the character of the river, during times of high water, judging from the depth of the river, the narrowness of the stream, and the amount of rise which it seems to have from the evidences that you saw, on the sides of the cañon, and judging also, from the present velocity of the water and its present quantity?

A. At high water the river would have the character of a torrent in all of its cañons, where it is confined by bed



rock sides and bottom; and in these reaches, where its fall is uniform, the current would be steady, or comparatively so. It would move with the greatest velocity & about along the center line of the stream. Towards the concave banks of the river channel the current would be much less, below such points, which project out into the river.

2. Is there a rule for determining the increased velocity of water?

A. There are different formula, which are employed in estimating the velocity of water, where certain facts are known.

2. Now, understanding as you do, and as forming the basis of your calculation, the fall of the river and the velocity of the quantity of water, which you have estimated, is there any



rule from such a basis, by which you can estimate its velocity, when you know also the increase in depth?

A. No sir. There is no way because the character of the river is entirely different when it is at the high stage, from what it is at the stage at which I saw it.

Q. In this bed in the mountains? A. In this bed in the mountains, because at the present time it does not cover its entire bed.

The <sup>sides</sup> ~~size~~ of the water flowing there are bordered by the bars which lie in the river. At a high stage the river will flow over the entire width of the bars, and between the cañon sides. It will be a river of an entirely different character.

Q. Now you say, that in the smooth places, that is in the places where the deposits are made it would run



with a smooth swift-current,  
or a stiff current? A Yes,

Q, About how swift would  
that current be?

A. I would not venture  
to estimate that without  
making some figures on  
the subject

Q, Will you can make  
some figures afterwards, The  
velocity of a river one foot  
in depth being given, by  
what rule would you de-  
termine the velocity of  
the same river, if the  
depth is twenty-five feet?

A. It would depend  
upon the width of the river  
and the character of the bed  
in which the water flows

Q, Will, it being the same,  
approximately the same,

Mr Cadwalader, Running  
over a smooth surface?

A. A Rude approximation would  
be to say that the velocity varies  
as the square root of the depth

Mr Hart That would be a rule



approximation? A. Yes

Q. Now, about what was the velocity of this river, when it was one foot or two feet in depth as you have stated, How many miles per hour?

A. It was about two feet per second

Q. Two feet per second?

A. Yes.

Q. I do not know how many miles that would be per hour, Now if the depth of the same river was twenty-five feet, what would be its velocity following the rule that you have made there?

A. It would be about sixteen feet

Q. Per second?

A. Per second, Now would or would not the velocity of the river be decreased by the width, and the obstructions that the river would meet, that is by the change in the banks and bed, and the sides of the river?



a The velocity would be influenced by the character of the bed, and by the alignment of the channel

2. That is, it would be influenced?

A. It would be decreased by the obstructions, and the amount of friction that it would meet with?

A. Yes, speaking of the current locally, in the cross section; not the average velocity of the entire flowing water

2. Are there any means by which you can determine the amount of matter, that is of sand, gravel, and debris, and slickens, etc., that water running at that velocity, and with that depth would be competent to carry?

A. No sir, I know of no way of getting at that, because it depends so entirely upon the conditions under which the material would



have to be moved

2. Well, taking the river as you saw it there, such a river as you have seen, apply your knowledge and information to the exact facts of this case, and the river as it is?

A. My opinion would have to be based on just what I saw there in the river, having seen material of a certain kind lodged in the bottom I would naturally conclude that water-

Mr W. C. Belcher Objected to the testimony sought to be elicited upon the ground that the witness has not shown himself to be competent

Mr Stark What school did you graduate from?

A. From the Polytechnic Institute, Stuttgart, which is an engineering school

2. Did you study hydraulics? A Yes. In connection



with the other engineering branches

Q. Did you graduate in that, as well as in the other?

A. I received a diploma covering the entire engineering branches, in which this was included

Q. Have you ever practiced hydraulic engineering to any extent?

A. In connection with the State Engineer Department my work has been nearly entirely on the subject of hydraulics, and the examination of rivers, and flowing water

Q. I understand you to say that you are an Engineer by profession, including hydraulic engineering?

A. Yes. And civil engineering.

Q. I will ask you now whether or not the transporting power of water at different velocities has been determined by experience or experiments



A It has, Although the results of those observations are not known to me

2. Are there any tables given in books upon the subject of hydraulics?

A. Yes, there are. Different authors have given their experience and their own conclusions, arrived at from such observations as they have made

2. Now, sir, state whether you can state from any rule that you understand either from experience, or from your education, as a hydraulic engineer, approximately the amount of material that a river would carry, such a river as the one that you saw - the north fork of the American - and with the velocity which it must have when with full banks, or running thirty feet higher than low water mark?



A. No, sir. I have no way of approximating that, because the mass of the material which it would carry, would most probably be very fine, and it would be carried in suspension by its waters.

Q. What kind of material would it carry?

A. It would carry material of all grades of fineness, from large rocks to impalpable powders.

Q. Including what? So far as what you have seen upon this river, is concerned?

Mr W. C. Belcher Objected to the question upon the ground that the witness is incompetent to answer it, as he has already stated that he does not know the elements which would be necessary to enter into the calculations of an expert, and hence his testimony in regard to



The matter about which he is now asked, would be entirely valueless, and hence irrelevant and immaterial.

The Court I understand him to say that he cannot answer the question

Mr Hart He says that he cannot tell the quantity, but that he can tell the character

Mr Hart State what your answer in that respect is?

A, I thought that I had stated that I did not know the theoretical principles, according to which the quality and quantity of material moved by water, could be determined. But from my observations in this regard, I was answering your questions

2, From your observations of the river

Mr W. C. Belcher I shall interpose the same objection now, as I shall insist upon it

Mr Hart Do you want to



explain? A. Yes. It is in reference to the character of the material moved by rivers. Your question, I understood, as relating to the maximum size of the rocks that a certain current would move.

Q. Yes. A. And that question I answered that it had nothing whatever to do with the finer material which a stream of water flowing would carry, and I said that I could not determine or could give no theoretical rule according to which the size of material moved by certain velocities could be determined.

Q. That is accurately?

A. Accurately.

Mr Rhodes I understood the witness to state, that he is unable to state the maximum weight of materials <sup>that</sup> may be carried by water. We do not ask that question, but from his knowledge and



experience, and observation as a hydraulic engineer, we expect to be able to prove by him that some amount of some materials may be carried in water

The Court You need not prove that

Mr Rhodes If we can approximate to the amount that can be carried - the largest and the smallest extreme in quantity, are we not entitled to prove that?

The Court - I suppose there are some of these facts which are familiar to every one. Fine material will float down stream, and sand and gravel will be carried down stream, and, under certain circumstances large rock. I suppose we all know that as well as the Engineers

Mr Cadwalader We want to give him certain classes of material, say for in-



stance that group sand,  
and to ask him what effect  
the water would have in  
the matter of transporting  
it.

The Court That is quite un-  
necessary. You seem to have  
shown, or claim to have shown  
that; and besides that, I sup-  
pose you may imagine  
that Courts know what  
everybody knows - that  
sand is carried by run-  
ning water.



Q. Now what did you find to be the character of the water between Canyon Creek and the middle fork of the American River?

A. The water near Canyon Creek in the American River, or in its north fork, was clear. Cobbles, gravel, sand and the material over the River bottom could be seen through two feet of water. Nearer its mouth the water was slightly discolored.

Q. Nearer the mouth of what?

A. Nearer the mouth of the middle fork, before the water of north fork reached middle fork. its color was dark green, it was still transparent but not as transparent as it had been near Canyon Creek.

Q. The water then you say was clear up and down the river there?

A. It was clear in the River.

Q. Did you notice any difference <sup>in the water</sup> ~~the~~ above and below ~~in the water~~ in Canyon Creek?

A. No. The water was clear above



And below

Q. Was there any mining at that time going on on Gold<sup>run</sup> Hill or ridge?

A. None that I observed

Q. Now coming down farther, to the City, have you observed the operations of the waters of the American River on the sands and deposits near the mouth of the River American?

A. Yes, I have seen the sand bar which lies between the bluff banks of the American River at its mouth at different times.

Q. Has it been any portion of your duties to take observation there? A. Yes, I have made soundings of Sacramento River and of American River at a high stage of the water,

Q. When did you first and last do that? A. The only time that I made these soundings embracing such as were made in the mouth of the American River was in April



79. But I have at different other times visited the mouth of the American River and seen the position of the bars there.

Q. Now state to the Court what effect the operation of the water, the coming of the floods and the cessation of the floods, has upon the sands of the American River so far as your observations have gone?

A. On January the 9<sup>th</sup> 79 I visited the mouth of the American River and at that time found the water flowing in a comparatively narrow channel. Near the south bank of the River; On the north side, In the Channel itself - that is, within bluff banks - was a large sand bar varying in height from about two to five feet. It was ~~very~~ long, probably several thousand feet. I visited the River again on November 2 - 79 after the high waters of the winter 78-9



had passed over that bar those high waters having occurred subsequently to January 9<sup>th</sup> 79, and at that time I found the water flowing near the north bank and on the south side was a large sand bar.

Q. State generally what the operation is } A. The sand bar had been placed over that part of the river which was before occupied by water, evidencing a deposit there which had not existed at the time when I first saw the River  
Mr Cadwallader What time did you state you had observed the American River at its mouth? what were the respective times?

A. On January 9<sup>th</sup> 79, on November 2<sup>d</sup> 79, and again on November 20, 81.

Q What was the first date

A. January 9<sup>th</sup> 79

Q. What was the stage of the River? A. It was low water



Or nearly so

Q What was noticeable below the mouth of the River ?

A. There was the large sand bar which generally lies on the left bank of the Sacramento River below the mouth of the American

Q. What was noticeable on the second occasion ?

A. That sand bar also existed on the second occasion in the same position.

Q. What on the third ?

A. It was there also, this last examination having also been at a low stage

Q. All those examinations were at a very low stage of the water were they ?

A. Yes.

Q. Did you ever examine that River at its high stages

A. Yes, I made soundings across its mouth while it was at a high stage

Q. At what time ?

A. In April 80



Q. What was the amount of water being discharged there?

A. The American River was flowing with a very slight current. Most of the water was ~~crossing~~ <sup>across</sup> ~~across~~ <sup>its</sup> ~~the~~ bank either on the north or south side and entering the Sacramento River at other points, not directly at its mouth. It was after the American River itself had been at its highest stage.

Q. How much water was there in the American River?

A. I had no means of estimating the quantity that was flowing there; I formed no opinion at that time of the velocity of the water.

Q. What were the dimensions

A. The depth of water at that time was about eleven feet at that ~~time~~ from bank to bank.

Q. What was the distance from bank to bank?

145. A. At the mouth it was about



four hundred feet. About  
700 hundred feet above the  
mouth in the American River,  
it was 800 feet or more, app-  
roximately

Q. What was the Current

A. As I remember the Current  
was very slight. I formed no  
opinion at that time as to  
what it was.

Q. What was the Condition of  
the water. }

A. The water was muddy

Q. Can you give us any Idea  
of the amount of water that  
was passing out per second,  
either in feet or inches, or  
Can you compute it if we  
give you time enough }

A. No. Not at that time.  
Not under those Conditions of  
the River.

Q. Why } A Because I have  
not the data giving me the  
slope of the water surface at  
that particular time

Q. Suppose the Current was  
given you } A. But I have no



Means of arriving at the Current.

Q Did you look at the Current  
A. I probably did. But I do not remember what opinion I formed of it at that time

Q. Have you ever been on the American River at its high water stage in the neighborhood of Smiths Gardens where the bridge is? A. No

Q. Have you ever taken any cross sections of the water of the American at any of its flood stages? A Only those just referred to, in the mouth, in April 1880 at which time the depth of water was about eleven feet and the gauge reading in front of the City here was about twenty three feet, showing that the deposit in the mouth of the river was much higher from bank to bank than the elevation of the plane of low water after the water has fallen  
Mr W E Belcher That is in the  
American you now speak of



as to the deposit, is it - }

A. Yes

Mr Cadwallader Did you examine the sand which constituted that bar in the American

A. The bar when I first saw it in January 79 appeared to consist of pure sand. The second time that I saw it there was a layer of finer material having a yellowish color appearing like a clay with a very little sand in it. At about four feet below the general surface level of that sand bar the thickness of this ~~the~~ layer of clayey material was about two feet

Q. Nothing has been asked you I believe on the subject of slickens ? A. No

Q. State if you know the origin of them and what they are composed of }

A. Slickens I think is a local term but it is generally applied to any material ground to an impalpably fine powder



Which is deposited by water

Q. What is it composed of

A. It may be composed of almost any character of mineral

Q. The same material in the Gold Run would it make slickens ? A. Yes

Q. The same material — would it make the sand which you saw in the mouth of the American River ?

A. Yes I think so, although that sand may have had other sources of origin.

Q. Why do you think otherwise? give us your reasons ?

A. Because this sand as it appeared deposited in different points of the River, contained different minerals, and these minerals appear in the different rocks composing as well the original geological deposits as the later deposits in these Gravel beds

Mr Hart I was trying to get from you the operations of the waters of the American River



Upon the deposits in the Channel A. From these observations which I have made I have noticed that at times there was more material deposited there than at others and that the material moved must have gone down stream and was subsequently replaced by other material.

Q. Now have you watched those operations to see how they are done and at what stages of the flood these effects are produced upon the materials deposited?

A. The observations made in the mouth of the American River by me alone were not sufficient to establish the exact condition of the River bed at the different stages of the River. But from a general knowledge of the action of flowing water, I know that at the high stage, or while rising before the River was above its banks, it washed out the sand bar or most of it. And as soon as



the water spread out above its banks and the River was no longer at a flood stage its Current slackened and the dirt was replaced. Again when the River was within banks and flowing only in its narrower Channel it cut out for itself through the sand bar the new Channel ?

Q. Now after this washing out process, at the time that the River comes down at its first flood, how does it fill up ? how does the River fill up at the mouth ? level across so as to ~~plane~~ form a plane or at different heights in the bed of the River ?

A Generally at about a level plane

Q. Leaving a level plane across, over which the entire width of the River runs ?

A Yes

Q How low does the water get before it commences to make a Channel through that bed or



through that level plane  
 A. It depends upon the elevation of the top of that plane. In 1880 it commenced washing out a new channel, probably at a gauge reading of 20 feet  
 Q. To what depth does the narrow channel cut through the sand?  
 A. It cuts down through the sand until the low water plane of the American River at its mouth coincides or very nearly so with that of the Sacramento River.

Q. How much of that ordinarily  
 A. It was about five feet at the low water stage in '79, about ten feet at the low water stage in '80, and is at the present time between four and ten feet the bar having elevations varying between those figures above the low water plane

Q. Now from your knowledge of the operation of flowing water upon material such as sand can you state whether or not the effects which you have



Observed at the mouth of the River would be the same or would vary in any degree from the effect that it would have upon the River above farther up, or upon the same material or same kind of material?

A. They would be the same where the material is deposited under about the same circumstances. It may be deposited in such a way that it will follow different laws in its motion.

Q. Will you mention how it would necessarily be deposited in order to have to follow a different law? A. It must be lodged in some such point that in a high stage of the River and Eddy will be formed or a slow current which will not move the material. If it lies immediately in the bed of the stream in the line of the strongest current it will move as indicated.

Q. Did you ever notice or have you recently noticed the



Operation of the Current of the Water at ordinary low water mark upon the sands at the side the sand banks through which the water runs ~~along~~, <sup>not</sup> ~~in~~ low water mark but as high as the River is at the present time, say, between high water and low water mark. A It has generally cut for itself a channel between those bars and breaks off the bars in such a way as to leave a bluff or bank standing there at the edge of the sand bar.

Q. A Bluff bank of sand?

A. A Bluff bank of sand.

Q. Now the Current passing that bluff bank of sand — what effect does it have on it?

A. It is very apt to undermine it and cause it to break in.

Q. Did you ever notice whether it does that at the mouth of the American?

A. It does so here at the mouth whenever one of those vertical banks happens to lie in a



Concave bend of the River so that there is impacted against that bank. if it lies on a Convex side, as sometimes happens then there will be no likelihood of any breaking in

Q. Have you noticed what has been the effect of this breaking off of the banks of sand through which the River runs; what the effect of that is; where the sand goes that breaks off and falls in  
A. Some of it remains there forming the bed of the River other portions have moved with the Current. Each grain of sand, as struck by a particle of water, may be rolled on, which will move in the direction of the water. Some of the sand is light, has a small specific gravity, that will move very easily and move very far

Q. Do you know by what strength of Current sand will be moved?



A. If the sand is composed of light enough material a very slight current will move it. If it is very heavy material it will require a current of greater force.

Q. What velocity of current will move a heavy sand or sand such as you see here on the bank of the American River?

A. It is moved by a current having a velocity of about three feet per second.

Q. What velocity of current will move gravel, small gravel and carry it along. If you know?

A. I do not know. I do not think I have any means of determining.

Q. At the time of your observations at the mouth of Canyon Creek did you notice anything there, any physical object, tending to demonstrate whether or not the deposits in that stream



have been carried away?  
did you see any tree in  
the stream?

A. At the mouth of Canyon  
Creek?

Q. Or near it?

A. None that I remember at  
the present time

Recess until  
Friday December 2<sup>d</sup>  
at 9.30 am



